Issue 57 • December 9 1989

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NEW COMPUTER EXPRESS

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- Marvellous MIDI
- Video digitisers
- Super Supra modem

ST
- DMA splitter
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PC
- PopDrop utility
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- Arcade Soccer game
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- Adding oomph!

CPC•C64•MSX
ATARI XE•PCW
SPECTRUM•QL

SPECIALIST COLUMNS

END OF AN AMSTRAD?

New UK boss close to admitting defeat on ill-fated PC

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CHRISTMAS CRACKERS

Which computers are the best buys this Christmas? We name our top all-rounder, the best machine for beginners, the recommended buy for business use and the handiest of the portables in our definitive guide to the festive market

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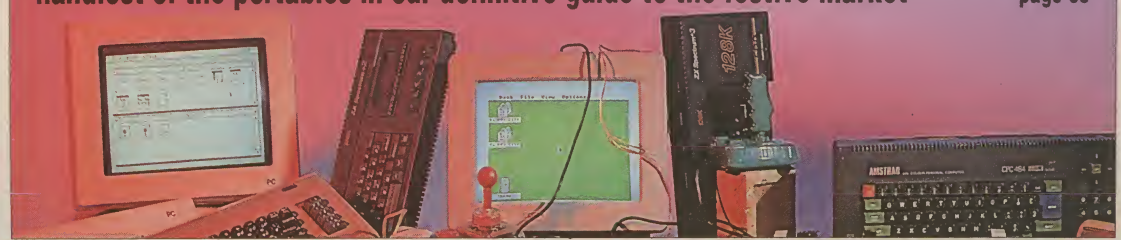

50 LEADING PERIPHERALS

36 PAGES PACKED WITH BRITAIN'S BEST COMPUTER BARGAINS

★ SHOPPING EXPRESS ★

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Survey reveals change of attitude to computers

ONE IN FOUR HAVE A HOME COMPUTER

More than a quarter of the British population now have a computer at home, with 28 per cent of computer owners finding a use for the machine every day.

According to a survey published last week by MORI and the Computer Management Group, the British have come to welcome computers and information technology (IT) even though they started the decade feeling at best lukewarm about the subject.

MORI's findings, entitled *IT into the 1990s*, are the result of the biggest survey on our attitudes toward computers since a 1982 Department of Trade and Industry investigation showed that few people were interested in or held positive views about computers.

Out of a random selection of 2,047 people (the same number as were questioned in the DTI's original survey) MORI found that 27 per cent of the population have a computer at home. Of those owners, two thirds said their computer is used at least once a week – 28 per cent reported using the machine every day, 25 per cent two or three times a week and 14 per cent once a week only.

Most people use their home computers for 'non-serious' gaming. A staggering 70 per cent play *Space Invaders*-type games while 26 per cent like to play more intellectual games such as chess.

Regarding more serious pursuits, 26 per cent of the public use a word processor, 13 per cent prepare their accounts on computer, 11 per cent use a database, six per cent run spreadsheets and as many use graphics applications.

AT WORK

The number of people who come into contact with computers at work has roughly trebled over the last seven years. An impressive 45 per cent of the cross section said they had a micro at their place of work – compared to only 16 per cent in 1982 – and of those, 21 per cent actually use the computer at work, while in the original DTI survey a mere six per cent used a personal computer.

At the beginning of the decade only 37 per cent of people believed computers would create new opportunities for business. MORI found 84 per cent now agreeing with that statement.

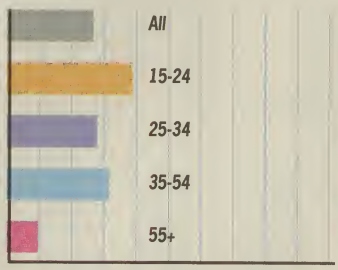
Also, 85 per cent say computers can help children at school, compared to a previous figure of 46 per cent. There is plenty of evidence to suggest that the change in attitude is based on a genuine, enormous rise in computer penetration of the education system. The number of primary school children using computers at school has rocketed over the period from 12 per cent to 76 per cent, while secondary school use is up from 51 per cent to 87 per cent.

On the down side, half those questioned thought computers will increase unemployment – that's 16 per cent more than in 1982.

The Computer Management Group commissioned the MORI poll in order to "assess attitudes to Information Technology and to asses the use of it". The field work took place in mid-August all around the country.

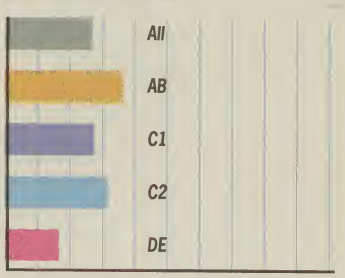
HOME COMPUTER OWNERSHIP

By age group



Values in percentages %
Base: All 1989 (Sample: 2,047)

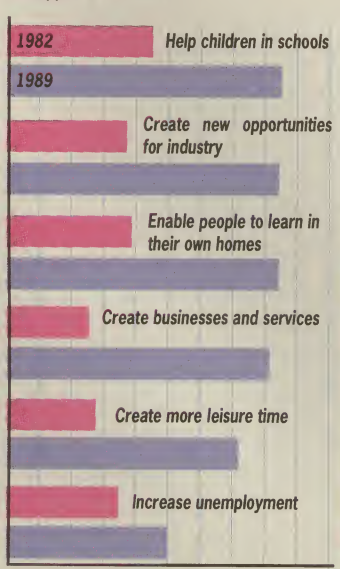
By socio-economic group



Values in percentages %
Base: All 1989 (Sample: 2,047)

EFFECTS OF I.T.

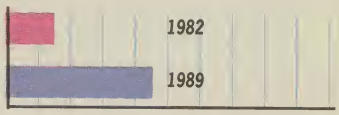
Which of the following do you think are likely to happen as a result if IT?


1982
1989
Help children in schools
Create new opportunities for industry
Enable people to learn in their own homes
Create businesses and services
Create more leisure time
Increase unemployment
0 10 20 30 40 50 60 70 80 90

Percentages of general public (Sample:2,047)

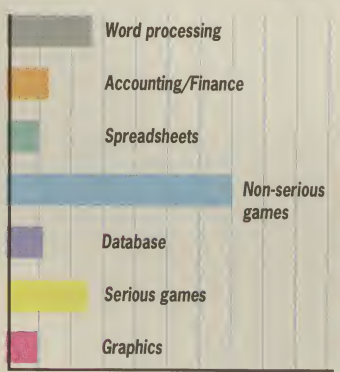
AT WORK

Do you have a computer at work?



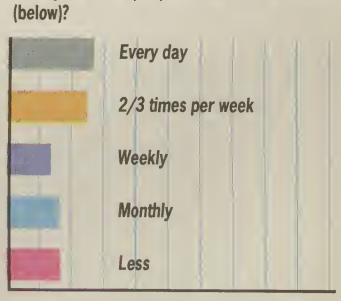
Percentage answering yes
Base: All working full or part time
(Sample: 1982 – 1,092, 1989 – 1,108)

USE IN THE HOME:



Percentages of computer owners (Sample: 581)

You mentioned using a word processor or computer terminal at home. What do you personally use it for (left) and how often is it used (below)?



Percentages of computer owners (Sample: 581)

• Young: decisions soon

Young sure of stalwarts

Despite uncertainties about the PC200, Amstrad is clear about the future of old workhorses the PCW, CPC and Spectrum.

UK managing director Barry Young confidently predicts that all three machines will continue to be an important part of Amstrad's activities and says that the machines are still selling to new users.

"Take the CPC. It's selling very well this Christmas and dealers are still taking even more from us. It's far from dead," Young told *Express*.

"And last year all the pundits were forecasting that the Sinclair Spectrum would be dead this year. Far from it – we have reached a situation where we've already sold all the Spectrums we had hoped to sell for this year. The experts say these machines are dead. But that's not what the public are saying."

He added: "They're like the Volkswagen Beetle. The thing was old-fashioned, but people get a level of confidence in something which has been around for a long time."

On the PCW he commented: "When the 9512 came along with a daisy wheel printer everyone said 'that's the end of the other two [the 8256 and 8512]'. I think in a lot of companies that product would have been discontinued, but every month we can predict fairly accurately how many we're going to sell."

• Next week: In a full and frank interview, Barry Young talks about Amstrad, how the company works, how it is dealing with its problems and its successes and how its boss, Alan Sugar, ticks.

Troubled PC may be scrapped in the New Year

AMSTRAD PONDERS FUTURE OF PC200

It is now almost certain that Amstrad will soon admit defeat on its low-cost PC200. For the first time the company has admitted that it is looking closely at the machine's future in the UK, and at the possibility of discontinuing it in the New Year.

In an exclusive interview with *Express*, Amstrad's recently appointed UK managing director, Barry Young, said of the PC200 that "decisions are being made on its future" and that withdrawing the machine from the UK market after Christmas was a genuine possibility.

Amstrad has always previously stood by its entry-level machine despite poor sales and dismissive reviews in the press. Last spring Amstrad's chairman, Alan Sugar, said that a major relaunch was being considered. However, all that has emerged since is the bundling of a dot-matrix printer adding an extra £100 to the retail price.

Despite a massive advertising campaign across all its other machines for the big selling season, Amstrad has decided not to back the PC200 in a similar manner. Few of the industry's major distributors are taking the machine, and retail presence is low.

"I don't think we would put the PC200 down as being one of our most successful products," said Young. "I don't know whether the concept was a mistake or whether we didn't really get behind it with the same aggression as we did with other products.

"Perhaps there was some confusion because, price-wise, it was bracketed in with the 1512."

He added: "It's difficult. The only thing I remember from when we first launched the PC200 was that all the people who were involved were tremendously enthusiastic about it and said what a good idea it was."

• PC200: shaky future for a disappointing machine

The PC200 was unveiled at the PC Show in September of last year. At the time it was hailed as the first machine in a new 'Sinclair Professional' series. Amstrad had hoped to appeal to those people who could identify with the Sinclair name and who wanted a low cost IBM compatible.

It retails at a basic price of £299, but costs £499 for buyers who want it packaged with a colour monitor. With only four colours, the machine is a poor rival to Commodore's Amiga and Atari's ST as a games machine, and it does not fare well when compared to Amstrad's own low-cost PC1512, which is still selling healthily.

But Amstrad will probably not lose money on the product. Stocks of the machine will be sent out to those countries which Amstrad feels will find it attractive. A company spokesman said that stock levels in the UK are not high, but he was unable to say how many of the machines have been sold here.

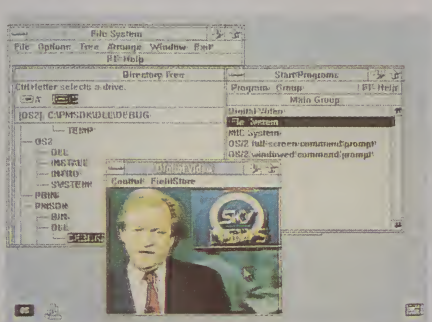
Catalyst for multimedia

A new company has been formed to cash in on the booming world of multimedia.

Catalyst Developments aims to supply all things multimedia including computers, video cameras, recorders and a comprehensive range of software.

Multimedia is the amalgamation of computer technology and other electronic visual media. You could, for example, run a television broadcast as a window on your personal computer. Or your machine could be used to edit video tape or generate slides.

"We'll be addressing the whole area of multimedia and CD-ROM which is really opening up now," said MD Nigel Phelps. More on 0273 208933.



• Multimedia in action under IBM's Presentation Manager

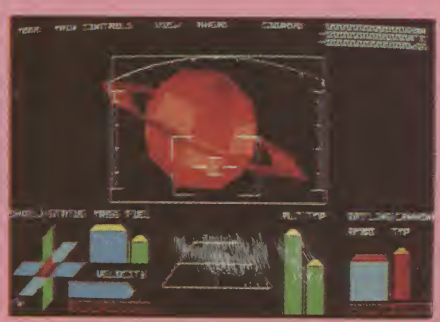
Space trader close to home

Our own solar system is the setting for a new space trading game from Mission Software.

***Dominion* is based around familiar planets such as Saturn, Jupiter and even Earth. The different worlds even display some of their real-life characteristics – Saturn has rings around it and Mars is, as ever, red. Mission has even included accurately scaled-down distances between the planets in the game.**

The American-sourced game is to be distributed here by Gainstar.

"It's not just another space trading game like *Elite*," said the firm's spokesman Philip Sareen, "There's so much to it."



• Dominion: good heavens

Dominion is available for the ST, Amiga and PC. More information on 0458 253170.

New add-ons will transform games machines

SEGA'S CONSOLE REVOLUTION

Sega is set to transform the games console market with multi-user arcade games for comms users, a disk drive, graphics tablet and fully-functioned keyboard for the 16-bit Megadrive console.

The Tele-Genesis games modem system (the Megadrive is known as Genesis in the States) will allow games to be played head-to-head by people in different parts of the USA – at first it will only be on sale there. At the moment there is only one title available, *Tele-Genesis Baseball*, but after recent agreements by 20 leading American software houses, including Activision and Spectrum Holobyte, to supply games for the Genesis it's can only a matter of time before more modem games appear.

First off the line looks like being Holobyte's *Falcon*, the popular F-16 simulator distributed over here for the ST and Amiga by Mirrorsoft. *Falcon* already has a serial link for combat between machines.

The proposed keyboard, 3.5-inch disk drive and graphics tablet add-ons are only planned for the Japanese market at present. This could point the way for the future of consoles, since these provisions would open up the possibility of serious software on disk or cartridge. In addition, users could save data files or game positions on the disk, and the graphics tablet could assist with games programming and art generation. ■

• *New era: Sega's revolutionary modem (above) and keyboard (top)*

RAM shortage finally over

The shortage of computer chips appears to be over, with most hardware manufacturers now overstocked and some chips selling for only a third of last year's prices.

Market research leader Dataquest says most companies have treated a respite in the chip shortage as an opportunity to stock up. As a result chip manufacturers can expect to have a poor year financially.

"The situation is a complete turnaround from last year," said Dataquest's Bipin Parmar. "In 1988 there was a huge shortage of DRAM chips create by anti-dumping measures agreed between the US and Japan." Now, he said, the market is flooded by manufacturers who have set themselves up to cash in on soaring prices. ■

Computer exports up

Exports of British computers are set to increase by 20 per cent this year, according to Government figures.

Industry minister Eric Forth last week said that exports for the first eight months of this year were £1,588 million, and he predicted that the full year's figure would reach £2,280 million. In 1988 exports ran at £1,976 million. Exports include computers imported and then exported again.

Although the figures appear encouraging, Britain has a trade defecit in information technology of around £2,500 million a year. ■

US viruses hit UK micros

A new wave of viruses has arrived in the UK, although most of them appear to be low-level affairs sourced from pranksters in the United States.

The invader which is causing virus watchers most concern is Dark Avenger, because it is extremely contagious and can affect any PC processor. However, apart from getting in the way and cluttering up your system, it doesn't appear to have any serious side effect.

Disk Killer, on the other hand, is a virus which could prove catastrophic for careless computer owners. It can wipe a hard disk, but is only triggered if a machine is left on for 48 hours.

Another virus, Mistake, is rare at the moment. It intercepts keyboard commands and replaces them with dud letters. This will also show on print-outs.

Less annoying but more common is Typo. That has a similar effect but does not show up on print-outs. It's likely to drive touch typists to distraction. The virus is triggered by a using a single typing speed – exactly one keystroke every ninth of a second. ■

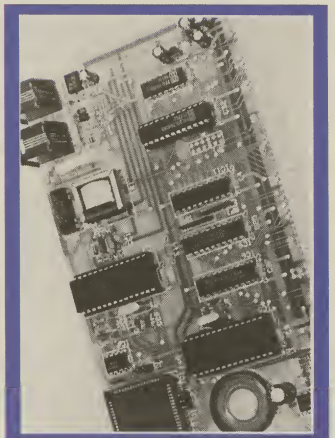
• *Rocky Otacke, Citizen UK's MD, is jolly pleased with himself and rally winner Pentti Airikkala*

Citizen canes racing elite

In the hit-and-miss world of sports sponsorship, it helps a great deal if you pick a winner to splash your name on, and printer manufacturer Citizen has had the good fortune to do just that.

A Citizen-sponsored Mitsubishi Gallant carried the company's logo to first place in the prestigious RAC Lombard Rally on November 23, beating 189 other competitors in the process. It's the first time a Japanese car has won the race.

Citizen points out that lots of people watch motor rallies and that "it's all about brand awareness and profile". A spokesman added: "It's a major investment and it's very nice to be a winner." ■



• *Shopper Show: Huge plans*

Shopper rues show caution

Delighted by their recent success, the organisers of the *Computer Shopper* Show are already predicting attendances topping 50,000 for next year's event.

The first Shopper Show at Alexandra Palace attracted more than 30,000 people, and many hopeful visitors had to be turned away at the door. Database, the show's organiser, says it had to take out advertisements on Capital Radio and LBC warning people to stay away because the show was already full.

Because of booking problems, Shopper '90 – pencilled in for the first week in December – will be moved to Wembley's conference centre. Database says it will be attempting to grab every available square yard of floor space.

"We're looking at all sorts of options at the moment," said a spokesman for Database. "We'll have to extend floor space considerably by hiring out more halls and we may extend the number of days of the show. This is the major buying and selling event of the year for computer users – certainly more important than the October PC Show." ■

Nintendo brands rival a cheat in bitter console war

The bitter war between Nintendo and Atari Games took yet another twist last week as the Japanese console manufacturer filed an additional copyright and patent infringement lawsuit on its rival.

Nintendo's complaint alleges that Atari Games "fraudulently and unlawfully obtained a copyrighted Nintendo program from the US Copyright Office" and used it to manufacture a Nintendo-compatible cartridge for its own games.

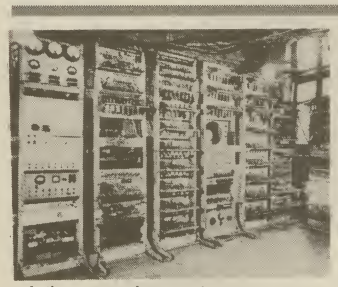
Nintendo is the only firm which owns the 'secret' microprocessor which allows the manufacture of cartridges for its console. As a result it has complete control over which games are launched for the massively popular machine.

Nintendo deposited its security system with the Copyright Office late in 1986 in order to obtain copyright registration. Under American law, third parties are not allowed access to a new product filed with the Copyright Office.

However, Nintendo claims that Atari Games obtained a copy of Nintendo's security system from the office by "falsely representing" that it was engaged in copyright litigation with Nintendo. The suit goes on to say that Atari Games used the computer program to decode its games' security system. Then Atari Games went on produce Nintendo-compatible games based on its own software licences.

"Atari Games got its hands on our computer program by lying to the US Copyright Office," said Nintendo's US senior vice-president Howard Lincoln. "This isn't reverse engineering; it's cheating."

Atari Games is expected to contest these allegations in court.■



• Antique: an early computer

Antique computers restored

A newly formed society is to restore old computers to working order. The Computer Conservation Society says the old machines should be regarded as antiques.

Doron Swade, the Science Museum's Curator of Computing, conceived the project idea after receiving frequent "heart-rending pleas from distressed technicians, engineers and computer operators".

Among others awaiting revival are two totalisators from the 1930s that were built to calculate the winning odds on dog tracks.

The first machine to be reconstructed under the direction of the head of the project Tony Sale, however, is the mammoth vacuum tube computer Ferranti Pegasus that dates from 1958. Second in line is an Elliott 803 geranium transistor machine with origins in the early Sixties.

The project is a joint effort of the Science Museum and the British Computing Society, the Computer Conservation Society.

Sale maintains that most of the expertise of computer design is still in people's memory, and the people around at the founding of the machine are now getting old. "The information is in people's heads," Sale said. "If we fail to capture it within the next five years, it will be too late." ■

16-bit show

ST and Amiga owners looking to check out the latest kit for their machines and spend any spare cash after Christmas are being asked to visit next month's 16-bit Computer Fair.

It's to be held at The Royal Horticultural Halls in London from January 12th to 14th with just under a hundred exhibitors likely to turn up.

It is hoped that some 20,000 people will make their way to the show. Tickets are £2 each from 0726 68020.■

Distributors say 1989 is another boom year

COMPUTERS ESCAPE SPENDING SQUEEZE

The widely-predicted recession which is affecting High Street sales of electrical goods this Christmas has failed to hit computers.

Leading distributors say this year will see even bigger sales than last winter's boom. While other 'brown goods' such as record players, television sets and satellite dishes are not being bought, computers are reportedly 'flying off the shelves'.

ZCL, which supplies hundreds of dealers, says it is selling 150 per cent more Amigas than last year, and that serious PCs are extremely popular.

Chairman Don Carter commented: "With money tight people aren't buying the more mainstream brown goods such as television sets. They want to invest in something serious. We're seeing excellent sales of Amstard PCWs and PC1512s and 1640s.

"There are also a lot of people buying Spectrums as a first computer. We're breaking records all over the place."

SDL's John Arundel told *Express:* "The biggest seller this year is still going to be the C64. It's extraordinary." He said that sales of the ST and Amiga are running neck and neck.

Express called half a dozen branches of Dixons around the country. All said the ST and the Amiga are selling at roughly equal levels.

Commodore has already said that it has run out of C64s and Amigas and that all available machines are already in distribution channels.

Now Atari says it's going to be flying in 15,000 STs from its factory in Taiwan. A spokesman said: "Bob Gleadow [Atari's UK managing director] is spending all his available time organising this. Distribution is very patchy."

Acorn's Archimedes also appears to be having a good run. At the recent *Computer Shopper* Show it is said to have outsold even the C64. Retail chains John Lewis and Allders have announced that they will take on the new A3000. Dixons already sells the machine in some of its branches in larger cities.■

FBI suspects ex-Apple man of code theft

A former employee of Apple is at the centre of an investigation by the FBI on suspicion of stealing source code from the hardware manufacturer.

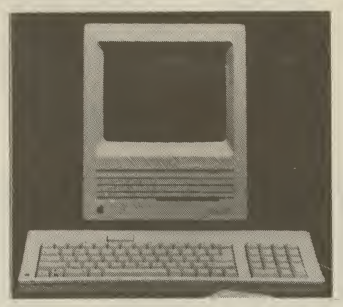
Grady Ward is accused of mailing confidential Apple Macintosh code to various US magazines and software developers. Four other people are also said to be under investigation.

Ward says he is innocent and claims that he's under suspicion because he has a reputation of being a hacker. He has been served a grand jury subpoena by an FBI agent.

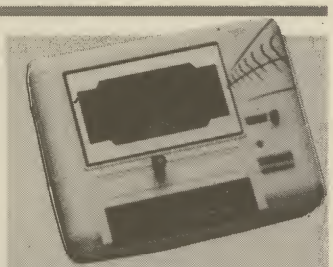
Last June leading American Macintosh magazines received disks containing original Macintosh source code from an organisation calling itself the Nuprometheus League.

An accompanying letter said: "Our objective at Apple is to distribute everything that prevents other manufacturers from creating legal copies of the Macintosh. The Nuprometheus League has no ambition beyond seeing the genius of Apple employees benefit the world."

Apple has said that any employees leaking information will lose their jobs.■



• Macintosh: source code theft



• Load-It: beats tape failures

Speccy taped

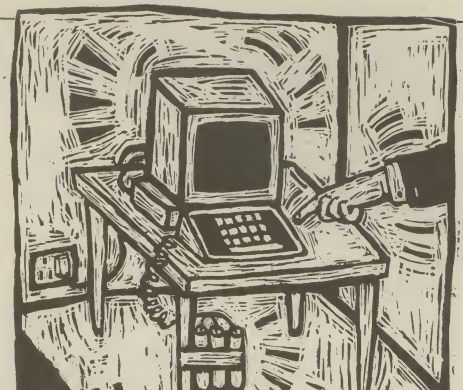
Spectrum owners pulling their hair out while loading software from unreliable datacorders will be pleased to hear that Mills Computers has solved their problems.

£39.99 buys you the new Hi-Spec Load-It Data Recorder – a unit which allows the user to manually adjust the play and record heads for maximum signal strength.

Hi-Spec Load-It is compatible with all Spectrums except the +2, which has its own integral tape deck, as well as the new SAM Coupé machine. More on 0773

Professor warns of extremist danger

TERRORISTS MAY STRIKE MICROS



Leading terrorism expert Professor Gary Perlstein has warned that extreme political organisations are looking to use the power of computers to further their campaigns.

In a speech at the International Conference on Terrorism he said: "They are aware that modern society is putting everything on computers. The terrorists of the future will not be uneducated peasants." Speaking from Portland State University where he works as a lecturer Perlstein told *Express*: "Many organisations are sending members back into the educational establishment in order to learn computer science. I foresee them attacking our computer systems within the next few years."

He predicted that computer systems which control transport networks would be under threat. "The terrorist of tomorrow won't come out of slums. He'll have a PhD in computer science."

The FBI has already highlighted the 'techno-terrorist' threat and is investigating various low-level attacks on national computer systems by small groups of extremist political activists.

In a recent interview, the FBI's executive assistant director, Oliver Revell, confirmed that the organisation is aware of a trend toward computer-aided terrorism. It fears attacks from Western middle class dissident movements looking for an easy target – and relatively unprotected computers are one of the easiest.

Perlstein, author of various books on terrorism, said: "They're obviously a vulnerable target in society and it's potentially extremely dangerous."■

Panasonic's PC parade

By Jerry Glenwright

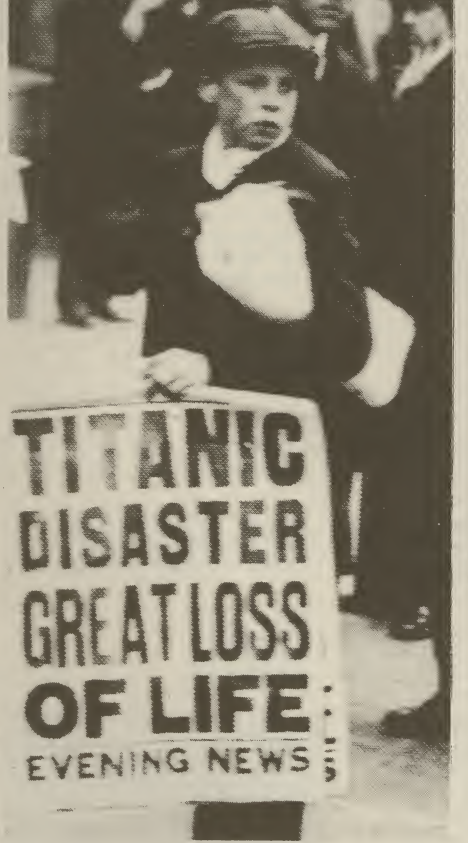
Just when you thought the PC compatibles market was filled to overflowing, another consumer electronics giant has decided to launch a range of IBM clones.

Panasonic recently previewed its new machines in both laptop and desktop configurations to 120 selected dealers in Lanzarote.

The computers cover the whole PC spectrum beginning with a handheld pocket PC weighing in at just 6lbs, moving through two laptops aimed at the executive-on-the-move market, to 286 machines for the power user. And for those who really need speed, there's the 20MHz 386 Business Partner computer, capable of lightning-fast computation. Panasonic plans to market a Unix operating system clone for the machine.

Prices for the laptops start at £695 with the entry level desktop costing £1,295. The company is already responsible for a large range of PC peripherals including fax cards and printers.

Each computer will be shipped with a 12-month on-site warranty. Panasonic can be contacted on 0753 73181.■



Titanic game launched

A new game is to be launched next month based on the ill-fated liner the Titanic.

Search for the Titanic **comes from CRL and is based on the recent exploration of the murky depths for the ship. Players have to raise money for the exploration and then dive down to undertake all the hazardous work.**

"Everybody remembers the Titanic. It was a great ship," said the firm's boss Clement Chambers. Some 1,250 people perished when the Titanic sank in 1912 on its way to New York. Despite having been touted as 'unsinkable' because of its watertight compartments, the ship struck an iceberg and sank on its maiden voyage

Search for the Titanic **will be launched for the C64 and PC in mid-January.■**

• Left: News of the loss of the Titanic hits the streets

Dragon's fire still burning

First-time computer buyers unsure of what machine to buy this Christmas would do well to pick up... a Dragon 32.

That's the view of Andrew Hill, boss of DragonFire and organiser of this weekend's Colour Computer Convention for Dragon and Tandy owners. The Dragon was launched in the mid-80s but failed to cash in on the micro boom because of tough competition and an unusual operating system which programmers found difficult to master.

"You can pick up a Dragon for only £60 and now there's some really good software around," enthused Hill. "It's a much better machine than the Spectrum or the C64."

Dragon users are a loyal bunch. Hill estimates that there are about 1,000 current users (almost all of whom are members of the National Dragon Users Group). He says he treats DragonFire as more of a hobby than a purely commercial exercise.

The show runs this Sunday from 10am to 3pm with a few DTP packages likely to be in evidence.

Call 0495 292159 for more details of the show.■

TSB says yes to computers

Up to 3,000 jobs are to be lost over the next 12 months at High Street banker TSB because of computerisation.

In a massive operation the company hopes to create paperless banks. All branches will be arranged in clusters with separate computer rooms containing all data and files on customers.

No filing will be done in the branches, and all information will be kept on computer. TSB says it will save £65 million a year.■

• TSB: paperless vision

Firm bought for £1

High-end software publisher Blue Chip Systems has been bought for only £1.

Ferrari Holdings has bought the troubled publisher, which specialises in estate agents software. It had fallen into difficulties because of the slump in the property market.

However, while most of us could have afforded the asking price there was just one special clause. Ferrari has to invest £500,000 in order to get the firm back to its former status – it made profits of £284,000 in 1988. Blue Chip will probably be switching its attention to the education sector in future.■

IBM discovers PS/2 faults

IBM may have to replace thousands of computers after the discovery of a central design fault in one of its PS/2 machines.

The firm is currently testing a new system board for the PS/2 Model 30. It says it will replace all boards on troublesome computers. The problem came to light when one user found some faults when trying to run top selling word processing package *WordPerfect*. False characters were coming on screen as well us unprompted indents.

Since then it has been found that other programs are not running correctly.

IBM won't say whether or not the problem is with one particular model of its popular Model 30 or across the entire range. One leading IBM dealership called it "a significant problem".

An IBM spokesman offered: "The problem has been identified and revised system boards are being tested." Curiously, he advised people who are experiencing the problem to connect the keyboard to the mouse port.

"We realise this is not the perfect solution, and as soon as the modified system boards are available we will replace the boards."■

Guild of Thieves programmers sign new deal

ADVENTURE LEADER JOINS VIRGIN GAMES

Adventure and role-playing games publisher Magnetic Scrolls has joined forces with Virgin/Mastertronic.

The two firms hope to provide gamers with a new generation of adventure games for the 1990s. Magnetic Scrolls, one of the pioneers of adventure gaming, is planning to launch a revolutionary new title in spring. The firm has been working on it for the past two years.

Previously, Magnetic Scrolls had been published by Telecomsoft label Rainbird, However, since the sale of Rainbird to MicroProse, the tiny company has been keen to secure a new deal.

Magnetic Scrolls' Anita Sinclair commented: "We had many substantial offers for our new product. We chose Virgin because of their commitment to the market place and the resources they are willing to put behind good games. But most importantly, they're nice people to do business with."

Magnetic Scrolls has produced top selling games such as *The Pawn*, *Fish*, *Corruption* and *Guild of Thieves*. Its first game for Virgin will be launched in the spring for the Atari ST, PC, Amiga and Acorn Archimedes.

Virgin Mastertronic's managing director Nick Alexander commented: "We've demonstrated our commitment to top-quality arcade games. Now we feel ready to do the same for adventure games. They don't come any better than Magnetic Scrolls."■

• Sinclair and Alexander: new adventure

The Edge's girl appeal

Every so often a games software publisher comes up with an idea so mind-blowingly original that the industry collectively drops everything to pursue this new goal.

Thankfully, The Edge isn't one of those companies. It is currently touting the old notion that there are hundreds of thousands of girls who play computer games and therefore hundreds of thousands of pounds to be made from them.

The Edge says its Christmas line-up, which includes cuddlesome cartoon characters Snoopy and Garfield, will appeal to this market and not just to the 'teenage boy profile'.

The Edge also reckons grannies will be buying these games for their computer-owning relatives. So if you were hoping for *Ninja Warriors* – hard luck.■

• Garfield: family way

Dawn of the data bus

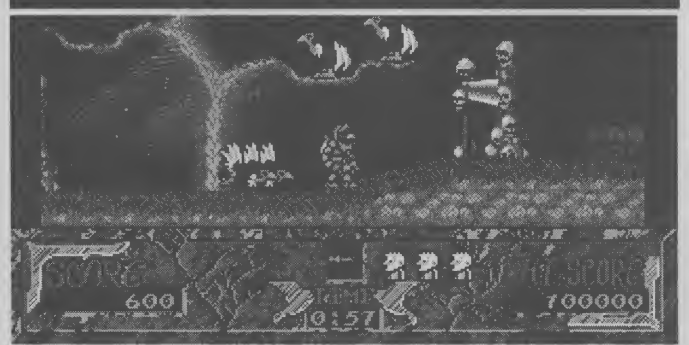
Commuters in Milton Keynes will shortly be the first in the country able to buy smart cards for transacting a range of services. Over 20,000 are being issued in the biggest experimental smart-card scheme in the world.

'Tickets for Life' are being issued by the town's bus company in an attempt to phase out paper tickets and conventional travelcards. The new cards hold a microprocessor and chip memory carrying details of the user's available funds and may also be used in several local stores and cinemas.

The cards never need replacing – they are simply 're-charged' when funds are used up by making a block cash payment to the bus driver. Milton Keynes Bus Company is also examining the feasibility of direct debiting ticketholders' bank accounts when the smarts are recharged to remove the need for cash completely. Lost or stolen cards will be hot-listed and automatically become inoperative straight away.

If the scheme is successful, it could become a blueprint for similar electronic systems throughout the country. ■

GHOST IN THE MACHINE



If you were one of the thousands who were glued to your computers when Ghosts 'n' Goblins first graced our screens then get digging into your pockets.

The follow up, Ghouls 'n' Ghosts, is about to be launched by US Gold on all major formats. The music and graphics are lovely and its great fun to play.

Ghosts 'n' Goblins was launched three years ago and was voted one of the top 10 games of 1986. It won't be surprising to see this pick up a few awards.■

Hard driving

Condor Computers has announced a high-performance 48Mb hard disk for the Amiga 500.

The Sidewinder unit plugs into the expansion port and has optional 2Mb and 4Mb RAM cards, and a pass-through connector which allows it to accept A2000 expansion cards, PC Bridgeboards and extra disk drives.

The basic unit costs £575 with 2Mb and 4Mb expansions priced at £399 and £599 respectively. As such, Amiga owners can upgrade their existing machines to the equivalent of a 2Mb A2000 for £974 and get a hard disk as well.

This represents something of a saving since a 2Mb A2000 alone would cost you around £1,000. More details from Condor on 0734 810066.■

Works PC

Elonex is to bundle Microsoft *Works* with its range of low and mid-price PCs as well as MS-DOS 4.01.

***Works* includes four different business packages – database, spreadsheet, word processor and comms software.**■

COMMENT

Why Activision versus ACE touches on matters that are important for all of us; and why Amstrad finally caught a cold with the PC200.

Rights and duties of the reviewer

As *New Computer Express* goes to press this week, a tale begins to emerge of battle joined between Activision, publisher of the new computer game *Ghostbusters II*, and *ACE*, the influential computer entertainment magazine which has spoken toughly of the game in its January issue. Activision has reached for its lawyers in a bid to resolve what is clearly a heated argument.

While it might appear at first sight that this is material more for the law journals and the heavy newspapers' media pages than the *Express* comment column, the outcome of the row should be of interest to all software consumers as well as to journalists, publishers, lawyers and other software houses. For somewhere close to the heart of the case is a fundamental issue regarding the relationship not between a manufacturer and the organ which reviews its product, but between a magazine and its readers.

GREAT EXPECTATIONS

The first *Ghostbusters* game – a spin-off of the blockbusting movie of that name – proved to be the biggest-selling computer game of all time, and Activision is clearly hoping to clean up again with the release of the sequel. The game has come to the market almost simultaneously with the theatrical first run of the new movie, and the publisher has spent freely on an advertising campaign calculated to produce maximum sales across the lucrative Christmas and New Year period.

Precise details of the pseudonymously-written review which so infuriated Activision are unknown, except that it scored the game at 251 out of a possible 1,000 – the rating alone will be interpreted by readers as indicating that the game is a complete turkey. Having learned of the content of the review, Activision reacted quickly by demanding that the offending item was withdrawn from publication, and when EMAP – *ACE*'s publisher – refused, the games publisher consulted its lawyers about seeking an injunction to prevent the magazine from being distributed to the news-stands.

ALLEGED DEFAMATION

Although none of the parties has yet been prepared to make an official statement on the matter, it is also known that both Activision and Columbia Pictures – distributor of the movie *Ghostbusters II* – are consulting further with their legal representatives about the possibility of libel suits over what both companies regard as defamatory remarks in the review. Activision is also considering suing for consequential loss after the distributor, Centresoft, allegedly attempted to return stocks of the game.

Activision is also known to be threatening to withdraw advertising from EMAP's range of titles – support which ran into six figures during 1989.

One needs to step away from these details to consider the full implications of what is potentially at stake in the case in hand.

The relationship between publishers and manufacturers – in many other fields as well as computer journalism – is rarely a purely remote one. It is not unusual for reviewers and editors to be wined and dined by manufacturers, for them to receive small promotional gifts or even be invited on amusing jaunts abroad to visit anything from rather dull manufacturing plants to exciting Hollywood film studios – though naturally any editor will stress that nothing sinister should be read into this practice. It is also clearly the case that most publications receive a substantial part of their income from product advertising, and this alone will discourage publishers and editors from taking gratuitous sideswipes, for only a fool bites the hand which feeds it.

EDITORIAL INTEGRITY

But one should note the word 'gratuitous' in that last sentence, for it is an important one. Despite the low regard in which they are held by the public, the vast majority of journalists do have more than an inkling of what is implied by the word 'integrity' and carry round with them a sense of professional pride which would surprise people who judge us all by the standards of the national tabloids. Or if this statement fails to convince, consider the more mercenary argument that any publication worth its salt knows in the end that it stands or falls by the level of confidence with which it is regarded by its readers.

There is an implicit understanding between manufacturers/advertisers and magazines that, when all is said and done, an item submitted for review or a story for publication will be treated in an honest, unbiased way – whether the reaction is a positive or negative one, at least it will be objective.

Sometimes – and this is not aimed at the computer industry specifically – there will be unscrupulous suppliers who attempt to apply undue pressure both to publishers, through advertising sanctions, and to journalists in more subtle and personal ways to ensure that their products are satisfactorily hyped. Equally, there are surely occasions where journalists go off the rails and fail to live up to their side of the bargain, handling their copy in a manner dictated by personal rather than professional motives. It is fortunate that neither is a frequent occurrence.

One cannot comment on the rights and wrongs of whatever is going on in the current battle between EMAP and Activision, particularly since the full facts are far from public at this stage. But it is certainly fair to observe that we hope the matter is eventually resolved in a manner which accurately establishes whether the mark has been overstepped by either side, rather than one in which the courts set an unsustainable precedent. The relationship between a magazine and its readers – of both a right and a duty to print honest comment – is one which concerns all of us, and one which must remain intact if the writing and indeed reading of reviews-oriented publications are to remain enjoyable and rewarding practices.■

A rare miscalculation from the experts at Amstrad

Amstrad's Sinclair PC200, the most controversial computer launch of the past two years, is a failure. Of that there can be little doubt, and even the company itself has now all but explicitly acknowledged the fact.

Amstrad, arguably Britain's most important computer manufacturer, had hoped to tap a new seam of users. It was looking for a buyer who would pay for a computer which was both a games machine and a business machine. The simultaneously flippant and serious user was reckoned to be out there waiting.

Promotional 'bumph' from the time of the PC200's launch quickly illustrated the company's aspirations for the machine. It was hoped that the prospective buyer would be aware of the Sinclair brand and of its success in home computers. The machine was even finished in Spectrum-like black. The machine's IBM compatibility was also a line stretched until it almost snapped, with Amstrad at great pains to point out that this was 'the industry standard' for business users.

The gist of all this for profit-seeking dealers was that they could look forward to the possibility of Spectrum and Amstrad CPC owners 'upgrading' to the new machine, and to further custom from first-time buyers looking for a safe, versatile option.

Unfortunately, Amstrad's new beast failed to make the grade in the exceptionally competitive low-cost arena. Was the problem that the company failed to get behind the machine sufficiently, as offered by UK managing director Barry Young in his interview with *Express*, or did the firm's usually perceptive marketing experts also mis-read the market?

In terms of price, the PC200 is pitched against what are regarded as 'sexy' computers – the Atari ST and Commodore's Amiga. Anyone looking to spend £300 can choose between the basic PC200 and the ST. Atari's machine is publicly perceived to be, and is, a superior computer. And those prepared to spend £400 can buy excellent packs from both Commodore and Atari.

Most people prepared to sign a cheque for £399 for a home computer will be looking forward to having fun with games and some pretty graphics – with only four colours, and bearing in mind the still limited selection of games for the PC, the Sinclair must be regarded as miles off the pace in this respect.

The PC200 leaves a lot to be desired as a low-cost business option too. Its relatively cheap appearance means that it doesn't really look the part on an office desk – not something it could afford to do with the wide range of good low-cost PCs on the market, including Amstrad's own 1512, 1640 and even the PCW range.

There is nothing to be gained from harping on about a machine that few people own. But it is instructive that Amstrad – the company which cleaned up with the CPC, swept the market with the PCW and revolutionised computing with its low-cost PCs – has finally backed a loser.

Only ardent Amstrad bashers will see any cause for glee here, but many others will find non-malicious comfort in the curiously reassuring revelation that even the smartest are fallible.■

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A BANG AND A WHIMPER

Despite scepticism in some quarters, Atari has indeed begun shipping supplies of the 1040STE to distributors, just in time for Christmas. As expected it's replacing the 1040 at the same price – so if you know anyone who's just bought a 1040, *don't show them this story!*

Trade paper *CTW* reports an Atari spokesman as claiming that 1040s are being used mainly for business applications and music. (Atari is very keen on the ST's potential as a business, music and all round 'serious' machine.)

"The advantage to end-users [of the 1040] is pretty transparent," he explained – meaning that the advantage is non-existent. "The software applications that make use of the STE aren't really available yet – but they will be in the first quarter of next year."

So much for the bang. The whimper from Atari is its claim that the 520 is

• The Atari 1040STE – being shipped now

suddenly in short supply. To the astonishment of no-one, that is those who fail to recall the same story last year, 520s are being air-freighted in and Atari's UK boss Bob Gleadow is warning that shortages will continue into next year.

A 'BETTER MOUSE' TRAP?

Have you ever suffered from that irritating problem of finding your ST mouse is incompatible with the Commodore Amiga and Amstrad PC? Er... no, nor have I, actually. Most of us have no contact with those other machines whatsoever.

On the other hand, there is almost universal agreement that the mouse that comes supplied with the ST has to be one of the most God-awful inventions since the K-Tel combined navel fluff extractor and tanktop cleaner. Mine (my mouse, that is) is forever developing a will of its own, rambling off on a complete tangent willy–nilly.

So while the inter-compatibility of the brand-new Naksha mouse may be a miracle of modern engineering, it's the claimed 'ultra high resolution electronics' that interest me far more. You can move the ST cursor from one side of the screen with a single, nimble flick of the wrist, which is a distinct improvement on the sluggish wanderings of the ST bundled jobbie.

With your Taiwanese constructed Naksha mouse – which boasts 280 dpi, a generous length of cable and 'an ergonomic feel you'll love' (lord spare us from advertising copywriters) – there's a mouse mat and one of those daft mouse holders you'll use once. It's certainly an aesthetically pleasing object, though I wouldn't use the word 'rugged' to describe it, except in conjunction with the word 'not.'

The Naksha mouse costs £79 with *DeLuxe Paint II* and a pop-up menu maker; or £39.95 without the software. Phone Naksha on 0925 56398.

MOUSE WITH NOUS

If 80 or even 40 quid sounds a bit like falling for a better mouse trap, there's a much cheaper solution that doesn't involve pensioning off your present model. Simply run a wee program by Antony Snell called *QMouse* that does wonders to speed up your pointer. *QMouse* is on the current *ST Format* Cover Disk, and if you nip round quickish to your friendly newsagent ...

HANGING ON YOUR DMA

Canny Scotish firm BBDP Electronics has announced a new DMA splitter that attaches to the ST's DMA port and offers access for up to eight other devices. Neat idea, but try as I can I can't for the life of me think of eight devices you could possibly need to have plugged in all at the same time.

- BBDP (zappy name, chaps!) also has a DMA Host Adaptor board that enables the connection of a hard drive using either an embedded or separate SCSI controller board. Cleverly the BBDP boys and girls have axed the integral clock – which is hardly an essential anyway – and as a result can do you a board for a mere £49.95 (to you, 50 quid).
- Boscad has unveiled a £30 Morse code tutor that works on both colour and black and white monitors.

A LEAD TO FOLLOW

More issues of *Express* ago than I care to recall I explained how it was possible to connect your ST up to an Amstrad CPC monitor. Very useful, if you happen to be handy with the old soldering iron.

But if this is the sort of job you are likely to make a botch of, then you may be interested to know that Microsnips supplies just such a lead (ref: MVDU 74) for a mere £10.95 plus £2 postage and packing – which I have to say is a good bit less than I paid. For more or less the same amount of money the company will supply you with a lead for ST to Philips 8833, Sony KX14, Fidelity CTM14 and Scart TV. Give Microsnips a buzz on 051 630 3013

Steve Carey

PLAYING TIP

ARKANOID II

Want to know how to get through *Arkanoid II* in one piece?

You can jump levels by holding down the caps lock key and typing MAGENTA. Now press S to jump through the levels.

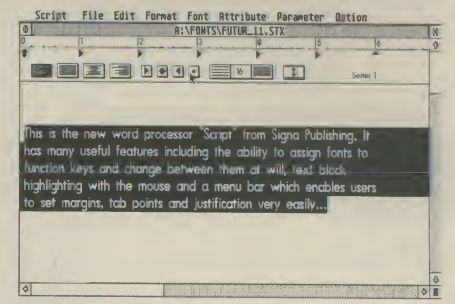
THE WORLD'S BEST WORD PROCESSOR?

There are some very fine word processing programs for the ST: Electric Distribution's well known *1st Word Plus* and *Word Writer* and Cavendish's *That's Write* – due for an upgrade, I understand. That's not to mention Arnor's oddball *Protext*, which completely ignores GEM as if it were a dirty word (can't say I blame it, either).

This last is the WP I use, for the simple reason that I moved up to the Atari from the 'umble Amstrad 8-bit CPC, which is no bad little machine in its own way (patronise, patronise).

For all you self-confessed CPC users sneaking an envious look at this page while you wonder if Sanity Claus can run to an ST, remember that you won't have to abandon the wonderful *Protext* when you finally make it to the promised land of the 16-bits.

The conventional wisdom about ST word processing may be overturned henceforth as


Script File Edit Format Font Attribute Parameter Option
A:\FONTS\FUTUR_11.STX
This is the new word processor 'Script' from Signa Publishing. It has many useful features including the ability to assign fonts to function keys and change between them at will, text block highlighting with the mouse and a menu bar which enables users to set margins, tab points and justification very easily...

• Script – destined to he world's best

Express revealed last week, because Signa is going to unleash *Script* upon an unsuspecting public. It's a German program, which bodes well, for there the ST is thought of as a serious machine reckoned to be more than capable of holding its own in the company of the IBM PC compatible flock.

Having had an early look at *Script*, I can confidently predict that it stands a better than evens chance, probably, but don't quote me yet, of being the word processor that sets the standards against which all others may be measured.

For a start, text can be highlighted with the mouse and replaced with a single keystroke; different fonts can be loaded and assigned to F keys, and generally the whole package is comfortable and intuitive. (If you've ever seen the hugely popular *Macwrite* running on an Apple Macintosh you'll be able to form a good impression of what *Script* looks like.)

Script should be available soon from Signa: direct queries to 0252 874406. The price is expected to come in at around £80.

STunner...HARD DRIVIN'

• Hard Drivin' is here to stay

Domark's much-talked-about *Hard Drivin'* hit the shelves this week and it's certain to give the other car games a race for their money. What made *Hard Drivin'* so much fun to play in the arcades was its 3D routines, which saw you crossing broken bridges, confronting slanted track and even having a go at a loop-the-loop. But how, you ask, have these challenges converted to the ST?

The game is split into two tracks – a speed track and a stunt track. On the speed track you race against the Phantom Photon to see who can achieve the best lap time. This segment is fun to play once you're used to the game, but it's the stunt track with all its wacky challenges that has instant appeal.

***Hard Drivin'* features slick 3D routines that lend it a very original and futuristic feel. Combine this with an unusual control method where the mouse is the preferred interface, and you have a great game which is a hell of a lot more than just another race to the finish line.**

Domark has announced that a disk containing extra tracks will be available in the Spring, with a course designer coming out next Christmas. This should ensure that *Hard Drivin'* stays playable for a long time to come.

PLAYING TIP

FIGHTING SOCCER

From the start of play, simply dodge a couple of players with the ball, and run up the middle of the pitch in line with the penalty spot. When you get near the goal, fire straight. The goalie will dive out of the way allowing you to score straight past him every time.

Scott Brown, Hertfordshire

• *Slamming one home in Fighting Soccer*

SOUND RAVE

One of the most commonly discussed areas of modern music making is the role of the computer within the recording studio. Many musicians regularly express their dissatisfaction with the standard of currently available music computer systems, and then spend the next four hours telling you about how they think the 'ideal' music computer should perform.

Undoubtedly top of the list amongst their requests is true multi-tasking. Wouldn't it be nice if you could run several music programs from different manufacturers concurrently, and then swap between them at the click of a mouse button? Even if the programs were not designed to work together, they would still function fully without interfering with each other.

And of course the ideal computer 'workstation' would have to be quick and friendly to use – a Mac-like window interface complete with mouse would be ideal. "Does such a computer exist?" they ask.

As we all know, the computer that these poor individuals have not been introduced to is none other than our own beloved Amiga.

Why are these people unaware of the Amiga's existence even though they regularly use rivals such as the PC, Mac and ST? And just whose fault is it that the Amiga is still an unknown force within the music industry? The musicians themselves? Music equipment suppliers? No, the answer is simple – Commodore.

Although the Amiga has been available for well over four years, the capabilities of the machine are still unknown to many of those that would most benefit from its obvious power. In fact, Commodore have never excelled where advertising is concerned, and if the Amiga is to ever become a true 'multi-media' success, some serious rethinking must take place.

COMMS NEWS

In evidence at the recent Commodore Show was the new SupraModem 2400zi, which is a unique 'modem on a card' for use with the Amiga 2000.

Up to five SupraModem cards can be fitted internally to an Amiga 2000 to provide a truly multi-tasking communications system. The modem offers 2400/2400, 1200/1200, 300/300 baud rates at full duplex.

• *Supra's 2000 Modem card*

The SupraModem supports both auto dial and auto answer, and is also fully Hayes compatible. For Amiga 500 owners, the SupraModem is also available as an external unit for the same price as the 2000 version (£170). Contact Frontier Software for more info on 0423 567140.

CALL ME TIGER!

Latest release from Dr.T (creators of many fine music products for the Amiga) is *Tiger Cub*, a powerful entry level MIDI sequencer designed with the inexperienced musician in mind.

The program is based around Dr.T's *Tiger* (which still hasn't appeared on the Amiga!) and offers many powerful sequencing tools such as conductor tracks, loop recording, step time recording and one step editing.

Unlike previous Dr.T sequencers (which looked like they were running on a PC rather than an Amiga), Tiger Cub offers full realtime graphic and score editing. Tiger Cub, like all Dr.T products, supports an MPE environment, which means that patch editors can be tacked onto the system with ease. For more info, contact MCM on 01-258 3454.

SPEAK TO ME!

If you have any views on any issues raised within AmigaBLIT, or in fact the Amiga scene in general, why not relieve your frustration by dropping me a line. Similarly, if you have any great tips, tricks or cheats for the latest Amiga games, then I'd love to hear from you.

Send your letters to: JASON HOLBORN, AMIGABLIT, 4 QUEEN STREET, BATH BA1 1EJ.

Jason Holborn

AMIGA

FRAME IT

The Amiga certainly isn't starved of video digitisers. Regardless of your pocket and application, chances are that you'll find an Amiga video digitiser to suit your needs. For budget digitising, the best is undoubtedly Rombo's Vidi Amiga, and for the professional, JCL's SuperPic is the undisputed king of them all.

While SuperPic is without a doubt a wondrous piece of kit – I spent many an enjoyable hour grabbing images from my video collection with *Amiga Format's* review version - SuperPic is unfortunately a rather inaccessible add-on for most of us, due to a price tag of a few pence under £600 In the next issue of Amiga Format, however, is your chance to win one of the amazing gadgets for little more than the price of a stamp!

Visitors to the recent Commodore Show may have spotted at the Hi–Tension stand a new digitiser that was happily grabbing the crowd as it drifted by. The unit, originally announced about two years ago by the American company ASDG, has finally arrived and looks set to give JCL's SuperPic a run for its money.

The unimaginatively named 'Frame Grabber' captures images in 1/50th of a second, and then uses its own internal dynamic RAM to store the image before passing it to the Amiga via the parallel port.

Frame Grabber includes specially designed image processing software which allows you to filter and enhance raw images, modify captured images, change brightness and contrast, modify colour palettes, filter image 'noise' and enhance edge details. Additionally, the unit supports grabbing in HAM. Indeed, from evidence at the Commodore Show, Frame Grabber is generally pretty mind blowing. Used in conjunction with one of the many genlock's available for our machine and the world of dektop video moves nearer by the moment. Watch out for my preview of the wonderful SuperGen2000 from Digital Creations next week. Meanwhile, contact Marcam on 0604 790466 for more Frame Grabber details.

★ Blitzer...BATTLE SQUADRON

European Electronic Zoo • £24.99

Emergency! Emergency! After their successful mission to the planet of Urania, home of the Barrax Empire, Commanders Barry Mayers and Lori Bergin have been captured by renegade Barrax troops that fled to Terrainia. The commanders managed to send a garbled message telling of their plight before all communications were lost.

You take the role of the squadron commander responsible for heading up the rescue mission to Terrainia. You must fly your Delta class fighter over a harsh, enemy infested terrain, blasting seven colours out of the Barrax defence forces.

The game consists of a vertically scrolling surface section with large craters at intervals along the terrain. You must fly your craft over the marker to enter subterrainian sections of the planet, where you will come across more weird and wonderful creatures.

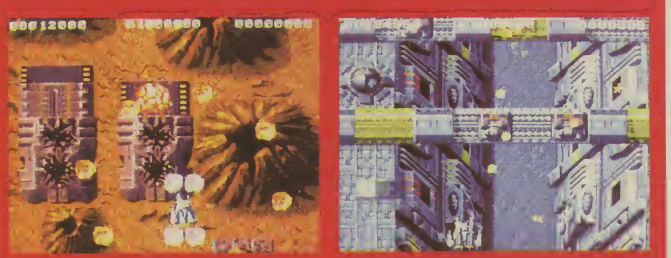
The most striking thing about Battle Squadron – like its predecessor Hybris – is the excellent graphics and sound. The game exudes a very arcade-like athmosphere, rather reminiscent of many Japanese coin-ops.

The gameplay itself is very much the expected frantic blast action. "But what's wrong with that?" says I.

Shoot- 'em-ups are needed every now and then to relieve the tensions of the day, and Battle Squadron is a very good shoot-'em-up.

My one criticism is the price. I don't see how selling a scrolling shoot-'em -up for 25 quid caan be justified. Somewhere between £15 and £20 would be closer to the mark.

Still, if filling hordes of aliens with laser death is your 'thing' then Battle Squadron will appeal to you immensely.



• *Battle Squadron immensely appealing shoot-'em-up*

OS/2 SIZE SLASH SHOCK!

Do you remember the piece in this column a few weeks back about Windows 3 and Presentation Manager? My suggestion was that IBM might use some of its marketing muscle to persuade Microsoft not to hype Windows 3 too much. It seems they are trying to do just that, without appearing to have any differences with their biggest software buddy.

Both IBM and Microsoft are now talking about a 'cut-down' version of OS/2, taking a mere 2-3Mb. Whoopee, we only now need 3Mb machines to run our single DOS applications and multi-task our OS/2 ones. Er, well no.

The new cut-down version of OS/2, which definitely won't be called OS/2 Lite (Microsoft has already threatened not to support such an IBM-inspired product) won't be able to run DOS programs. The bit that's going is the DOS-compatibility box. Oh, and it's unlikely to multi-task in any meaningful sense.

So we're left with 2-3Mb of code which seems to do little that DOS can't already do. I can't wait. There really does seem to be a gulf opening up between corporate buyers, who can afford to order 4 or 6 Mb RAM with every PC, and the mortals, who still consider a 128K upgrade to 640K a big purchase. I see no signs of RAM prices dropping and 6 Mb still costs as much as most people's PCs.

Windows 3, by all accounts, seems to be a good product and does multi-task. It can run more than one DOS task at a time and it'll be available real soon now, as long as IBM doesn't get its blue fingernails on the goods first. Come back GEM-XM, all is forgiven.

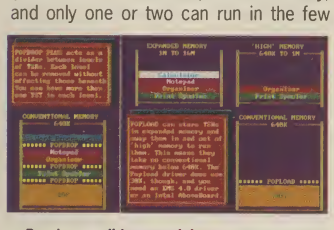
POPDROP PLUS

Data Liberation Ltd sent in a selection of interesting utilities the other day, the most unusual of which was *PopDrop*. This package is two utilities in one, and should be all you're likely to need for handling pop-up programs (TSRs) in conventional or expanded memory.

PopDrop itself is like an electronic divider that you place between sets of TSRs or between TSRs and conventional applications. Once installed, you can remove the layer upon layer of applications at any time, to regain the memory or to install an alternative set of programs. You can do all this without ever having to hit [Ctrl][Alt][Del] or waiting for a reboot.

The program is used by typing its name. This saves a small status file of under 1K in memory. You then load the TSRs or other programs you want. When you want to clear down the current layer, issuing another *Popdrop* command will remove the programs from memory. *PopDrop* commands can be automated by including them in batch files, so you can set up different working environments very simply.

The second part of the package is *PopLoad*. This utility is for people who have EMS expanded memory and want to use it to hold their TSRs. Regular programs can't run from expanded memory, and only one or two can run in the few spare areas between 640K and 1Mb, which is normally called 'high' memory. What *PopLoad* does is to load the programs into expanded memory and copy them one at a time into high memory as they're run. This effectively means that your TSRs will take no conventional RAM. *PopLoad* needs around 30K of low memory to achieve this swapping.



• *Popdrop: solid, essential*

What *PopLoad* doesn't do is to handle the expanded memory directly. You need an EMS driver supporting LIM standard 4.0, to which *PopLoad* will refer for information, and to which it will pass its requests for space allocation.

The whole scheme seems solid and the two programs, though independent, work well together. The package costs £103.50 all in, which is not cheap, but it's the kind of utility that could be essential if you're currently labouring with a lot of TSRs.

LASER EXTRAS

The new HP LaserJet IIP laser printer seems to have an increasing amount going for it. Not only is there a PostScript cartridge promised in the next month or so, but Fontware Ltd (not to be confused with Bitstream Fontware) has announced a one megabyte cartridge for the printer. This little beastie boasts more fonts than any other cartridge in its off-the-peg form (£460 inc VAT). For a consideration more, Fontware can be persuaded to incorporate your own logo, signature or graphic font into the cartridge as well. If this sounds like just the thing to make your partner's Christmas, ring Fontware on 0329 822857.

If you have more than one micro running into your new IIP, you may also be interested in ESI Sharespool distributed by Protek. This is a replacement I/O interface which slots inside the printer in place of the one supplied with the machine. The advantage of this is that there are four sockets in the back, and each can be connected to a separate micro. This is done via telephone-style jacks and special narrow, easy-to-route cables, which can have standard nine- or 25-pin plugs fixed to their other ends.

The spooler has 64K of print buffer which should be enough for most of what four PCs can throw at it simultaneously. The unit is completely transparent to any of the four users and doesn't suffer from the problems of scanning switch boxes. With some boxes, certain software (like GEM) won't recognise the printer unless the box is scanning the appropriate line when you start to print.

• *ESI-2040 ShareSpool*

TESTING TIME

No prizes, but try yourself out on a few of these abbreviations, gleaned from the Collins Computer Diary for 1990. The diary is sub-titled 'For the Home & Micro Computer User' – I don't believe the average user needs to know any of the following: What do they stand for anyway?

EBCDIC?
MTTR?
VAN?
FEP?
CAT?

TOPCOPY UPDATE

TopCopy Plus, is due for another update after Christmas. This latest version of the world's only true pop-up wp will then sport two column working and support for laser printers. Although it will currently work with LaserJets and the like, it knows nothing of font cartridges or proportional spacing. The new version will handle these through standard fontwidth tables.

The software company which produces *TopCopy* not many miles from the *Express* office has also changed its name and address. It used to be Innova software and is now Toplevel software of Bath Road Trading Estate, Stroud, Glos GL5 2QF. Ring them nearer the time on 0453 753955. General Accident have adopted the program nationwide.

Simon Williams

(answers to above)
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PC PEEKETTES

COMMUNICATIONS

Bigmouth is a cunning device whch lets your PC become a sort of intelligent answering machine. If people ring you up when you're out, Bigmouth plays a personal message and then records the reply on disk. It has now received BABT approval, so you can use it legally. Copies are available for £375 from Staria Limited on 0202 813141.

Also from Staria Limited is a new telephone product, the Powerline II card. This will allow up to 16 telephone lines to be handled from one PC. The price, including Toolkit software, is £1,200. Action Computer Supplies is selling Modular Technology's Micro Line Driver for £59. It allows transmission of RS-232 signals over 1,250 metres at speeds of up to 19.2 Kbaud. Action is on 0800 333 333.

MICE

Winghigh, on 0582 451395, is distributing Mitsubishi opto-mechanical mice. Guarranteed to be 100 per cent Microsoft–compatible, the mice cost from £49.95 inclusive of some utility software which gives pop-up menus to programs like *1-2-3* and *dBASE III*.

• *Mitsubishi mce – 100 percent Microsoft–compatible*

• /pic *Verbatim – buy a double disk pack, get a calculator*

FINANCE

Market-Eye provides private investors with access to up-to-date Stock Market information. It comes from The International Stock Exchange and is distributed by Micro Peripherals Limited on 0256 473232.

DISKS

If you buy Verbatim Datalife Plus 5.25-inch floppy disks, you can get a free calculator. Every double pack of MD2-D and MD2-HD diskettes (£16 and £25 respectively) comes with a pocket calculator. Verbatim is on 0372 377555.

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SPECTRUM

THE SPIRIT IS LOOSE!

It's nice to see the traditional Yuletide spirit of peace and goodwill to all men, that kind of thing, isn't confined to the slushy verses on cheap Chrimbo cards. Indeed, goodwill has spread to Virgin games, the renowned software house. In fact, Virgin has been doing its bit to promote warmth and friendliness this week by releasing *Double Dragon II* and *Ninja Warriors*, two beat-'em-ups that let you inflict acts of gross violence on various no-good types, while wearing the obligatory baggy pyjama bottoms.

Double Dragon II is, of course, the sequel to the commercially successful coin–op conversion of a few years back and is lots more of the same thing, which I suppose is fine if you like the 'thing' in question.

Double Dragon II has the usual variety of moves to put the baddies on the deck with and, ignoring the slightly dodgy motives, it's pretty good fun especially with two players simultaneously giving the bad guys what for.

The game's graphics and sound have thankfully been improved from the first outing, although these efforts in *Double Dragon II* still pose no major contribution to either field.

One swear-word-coaxing problem, however: the screen only scrolls when you go to the right edge of it, which makes avoiding the enemies' chains, daggers and spades pretty hard. Another lesser quibble is the difficulty level; I managed to fight my way to the end of the first level on my second go suggesting either a) It's too easy or b) I'm very talented. I'll leave that to your discretion.

Ninja Warriors is Virgin's other martial arts coin-op convert, this time from an arcade machine with a screen three monitors wide. The conversion has been squeezed down to fit the trusty old TV your Speccy co-habites with, and therefore there's also a major drop on the impressometer if you've ever played the arcade version.

Ninja Warriors is a fairly standard, horizontally scrolling style beat-'em-up, which, like *Double Dragon*, is more fun if you can persuade someone to play it with you. The idea's basically to guide your bloke through baddie–infested areas lobbing shurikens and performing other violent, downright anti–social actions to see them off. The range of opposition is pretty good, nicely drawn and includes rottweilers, huge tanks and fire breathers as well as the bog standard warriors, who fire bazookas to sap your life force.

While not being anything too special *Ninja Warriors* is midly enjoyable stuff, which might just encourage a drop or two of adrenalin during play. The appeal is likely to be severely limited if you're not a fan of the beat-'em-up genre by nature.

MAG BAG

Enigma, an excellent 128K tape mag, has received its fair share of plugs in past columns. In fact, as one of only about three regularly produced Speccy fanzines still in existence, and as a spiffing one at that, *Enigma* definitely deserves all accolades rained upon it.

Anyway, the latest issue (number four) has just hit the streets in a shower of broken plastic, and it's of the same high standard as the rest, with three musical extravaganzas written for the 128K by Ocean's Jon Dunnto accompany a C60's worth of text files.

The text too is pretty interesting stuff with lots of good game reviews, pokes and hints, some info and chat about the PC show, an interview with good old Mike Garrard and an exclusive preview of a new Alternative budget game that's very convenientally being written by most of *Enigma*'s Editorial staff.

For the first time, *Enigma* is also now available to the thousands of poor unfortunate proletariat, like me, who own 48K Speccys. This is an opportunity not to be missed. Send £1.99 or £1.50 and a blank tape (Minimum C60 length) to *Enigma*, 15 Westfield Road, Inverurie, Aberdeenshire, AB5 9YR. There's also a +3 disk version of *Enigma* which, it is claimed, is different to plain vanilla tape issues. Send an s.a.e. for more details or wait for a review in a few columns time.

BOX ON THE BRAIN

Unless you were abducted and held prisoner by visiting space aliens a few weeks ago, you must have seen this year's TV advert for the Speccy.

It's a fairly slick if bizarre ad which seems to ignore the Spectrum's capabilities and features in favour of the usual collection of nauseating brats. Still, the number of times it pops up on the box proves that Amstrad is serious about selling huge numbers of Spectrums this Christmas, which might go some way to helping Uncle Al out of the little cashflow problem he's got himself into recently. So if you're planning to buy a new computer this Yule, think of other people for a change and help keep Alan Sugar, his wife and six kids off the streets. Buy a Speccy!

Robin Alway

HACK ON

Here's yet another one of David Smith's hacks for the old but certainly still teriffic *Exolon* which I think you'll find is included on one of two Hewson compilations on the shelves and touting for Christmas trade even as I write. Ginormous thanks to David for more of his exemplary pokeing.

```
 5   REM Exolon poke
10   CLEAR 25999:  LOAD ""CODE
20   FOR f = 23326 TO 1e9
30   READ a
40   IF a = 999 THEN GO TO  60
50   POKE f,a:  NEXT f
60   POKE 64531, 125
70   RANDOMIZE USR 64512
80   POKE 65117, 30
90   RANDOMIZE USR 65082
100  DATA 175
110  DATA 50, 158, 123:
      REM ammo
120  DATA 50, 128, 123:
      REM grenades
130  DATA 195, 0, 91, 999:
      REM dta
```

PCW

CHRISTMAS DINNER GAME

What better way to while those awkward hours away between the Queen's Speech and *The Great Escape* than to play a few games on your PCW?

Well, OK, I can think of a few off hand; for a PCW owning friend, however, a game could be a jolly good present. Topologika is now offering its games at £11.95 each including VAT and p&p, and if you order an extra one, you get 10 percent off the total price. If you order an extra two, you get 20 percent off. An extra three gets you 30 percent, but the offer only goes as far as four, so don't think you can order eleven games and get them free.

- *Avon* is a new adventure game based on the works of Shakespeare. You don't need to know the soliloquy from Hamlet or offer a critical appreciation of Falstaff's position in English dramatic tradition, just have a spot of cunning and common sense. A bit of fun that will appeal especially to fans of the Bard.
- *Countdown to Doom* and *Return to Doom* are two sci-fi adventures set on a distant planet, Doomawangera, which sounds more like an Australian test cricket ground.
- *Yes Chancellor*, my favourite of the bunch, puts you in the Chancellor's Seat – no doubt still warm from when Nigel Lawson left it. You control the economy and see the effect of your policies on the nation. A great executive toy and fun for anyone who reckons on running the country better than the Government – which must include most of us. Hopefully it includes most of us, that is.
- *Giant Killer* is a good adventure for kids of, say, 7-14 that really makes maths fun. GK is, of course, based on Jack and the Beanstalk, and the game could be an ideal present for a child with access to a PCW.
- *Acheton* is 'one of the biggest adventures of all time', though I haven't played it. *Kingdom of Hamil* is another adventure while *Philosopher's Quest* is a game full of puzzles that might suit the crossword mentality.

Topologika can be reached with queries on 0733 244682.

INSTANT TIP

Put your daily or weekly reminders in a file called TEMPLATE.STD in any group on your startup disk. It'll be copied automatically on startup to the memory, allowing you to access it and edit the entries any time.

AND FINALLY

I always chuckle at the present ad campaign for the PCW 9512 which describes the disk drive as '1Mb' with a footnote admitting that it's '720K formatted'. Er, not much difference there, folks (but, then, who's counting?)

But had to laugh at what it says in the Index catalogue – an Argos catalogue-like publication you can get in Littlewoods – under the PCW entry. 'Contains 256K RAM', it says, '(180K formatted)'.

Ever tried to format a disk in the M drive? Let me know how you get on, that is if you get on.

MSX

DISKY SITUATION

Hands up all those MSXers who own a disk drive for their machine. Hmm, by the look of it, not many of you do own a disk drive, which is a pity because more and more MSX 1 and 2 software is now being released on this format.

This disky situation is mainly due to the price of chips for the ROM cartridges, set against the really low price of 3.5-inch disks. Even if the disk format is inexpensive, however, software isn't getting any cheaper as a result; look at the high price still being asked for Atari St and Amiga software.

The good thing about the disk format, though, is that several titles can be placed on one disk. In fact, M.P.T. computers, the main importer of Japanese software has now available a set of MSX disks called the Konami collection. Each 3.5-inch compilation disk contains five games on a particular theme.

For example, disk 1 is an adventure collection, and contains such gems as *Penquin Adventure*, *Yie Ar King Fu*, *Kings Valley*, *NightMare*, and a game that is new to me called *Emperor Yegar*.

The second disk includes sports classics such as *Hyper Sports 1* and *2* and *Boxing*, etc.

Disk three contains shoot-'em-ups, (my favourite), this includes the original *Nemesis*, and another new title *Twin D* etc. The last disk in the series is Sports 2, and consists of *Soccer*, *Ping Pong*, *Golf*, *Hyper Sport* and *Olympics*.

The proposed prices for the disks are £25.50 each for disks 1 to 3, and £29.00 for disk 4. This may sound expensive, but one gets about £75.00 worth of software on each disk; for more info phone 01-458 3310.

GAMES SCENE

There have been two more titles released since last I wrote – *Star Dust* from KIXX, and *Turbo Bike* from Alternative. Priced at £2.99, both are, like most recent MSX budget titles, sourced from Spain.

Turbo Bike is written by Dinamic, and *Star Pilot*, which incidentally won't load on a Philips MSX 2, is written by Toposoft.

As regards home-produced software, Domark tells me that it will be releasing the game *Toobin'* on the MSX format. This will be a full priced issue, £9.99; of course *Toobin'* has already been reviewed on other formats where it received high marks.

Byte Back tells me that it is soon to re-release *Strip Poker II* at the budget price of £2.99, and *Grandslams*, *The Flintstones* is also to be re-released at the new price of £2.99. Indeed, it looks like there will be plenty of games software for the MSX user to buy this Christmas, which must make the Atari eight-bit and BBC owner green with envy.

As shoot-'em-ups go, *Silent Shadow* (Kixx... label in UK at £2.99) isn't bad. The graphics and sound effects are good, if I found annoying the ship you control being the same colour as the background, like the Spectrum version, making it difficult to see what's going on.

Keith Neal

BBC

THE SOME TIME BLUES

My tip for this week is for all you BBC owners suffering from the dreaded intermittent faulty syndrome blues, or IFS for short. But do not despair.

Instead, take yourself down to your nearest Tandy or other similar electrical emporium and buy an aerosol of the variety that gas television engineers use. I don't know what brand name the gas is traded under, but if you explain what you want clearly, concisely and with determination, it shouldn't be too difficult to get hold of.

The idea is that when a component fails, it usually does so only when hot. A quick spray with gas cools the component down enough to get it working again.

By testing various chips in this way, you can soon isolate the faulty one. Possible culprits in the BBC include RAM chips, the 8271 FDC, and the video ULA. For two pounds, you could end up saving yourself far more.

MORE OOMPH!

Since it's nearly Christmas–time, you may be thinking of ways to add a little extra oomph to your BBC machine, especially if it has been getting slightly tired of late. All the studies about this matter I've ever seen indicate that sideways RAM (SWR) and double density filing systems (DDFS) are most popular.

So that's the situation, but what should you plump for?

Well, if your 8271 has called it a day, then you are faced with several 1771 based alternatives. Simplest, but not cheapest, is Acorn's own solution for maximum compatability. Along this line, Watford, Solidisk and Technomatic are the best known firms offering differing combinations of features.

Speaking broadly, the more features offered, the less compatible. Unless you are running old games, however, you shouldn't worry – more oomph really will be more oomph.

Certainly I found the double density mode on my BBC at home invaluable when setting up a database of all the STD (telephone) codes in the country. One drawback must be mentioned about increasing oomph though, and that is that disk access times are often slowed significantly.

You can overcome this particular drawback to some extent by typing *FX255,15 to speed up disk access, followed by BREAK (use CTRL–BREAK on a Master).

BLAST! FROM AUDIOGENIC

Written by Sam Inglis, with music by Allan Theobald, BLAST! has a distinctly Thrust–like aire to it. You control a small spaceship by manoeuvring it against the force of gravity.

Indeed, the game is a multi–level blast–'em – up with ingenious graphics and plenty of challenges, and to get full bonus points you have to complete each screen within a time limit, which is very difficult .

Worthy of note on this one is the impressive collision detection routing, which, somewhat incredibly, is accurate down to one pixel.

Andrew Brown

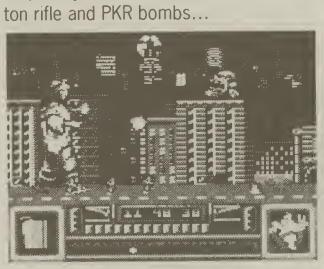
CPC

BUNCH OF SLIMEBALLS

At last! Just in time for Christmas, Activision's blockbusting (or should that be ghost-busting) film licence has arrived on the CPC. *Ghostbusters II* is here. The game is a three-stage blast offering three distinct styles.

To begin with, some poor fool has to volunteer to be lowered down a Manhattan sewer to collect some slime. As if that wasn't ghastly enough, on the way down you face all sorts of grisly ghouls consisting of hands which come out of the wall and try to grab you, slime-spitting nasties and creatures which try to saw through your rope.

And just to add insult to injury, your slime-collecting scoop is in three bits, and you have to find those too. You face all these terrors alone as you dangle helplessly on the end of your rope. Helplessly, that is, except for your proton rifle and PKR bombs...



• Level 2 – blasting spooks with fireballs

Once you've got your slime, you start the second stage, where you control the Statue of Liberty as she strides down the Main Drag. America's first lady is full of slime herself, and sends out great gobs of the burning stuff to incinerate the evil ghosties in her path.

Upon being hit, the expiring ghouls turn into slime, and the brave citizens of New York must rush out to collect it – all the time being defended by the 152-foot-high heroine.

The third level has you battling the evil Vigo, mastermind behind the spectres, where you control each Ghostbuster individually as you try to defeat your terrible opponent.

The game mimics film format by displaying programming details as mock credits at the start and digitised intro screens for each section of the game – and, of course, you've got that catchy *Ghostbusters* tune that's driving you mad after a day but you can't stop humming... aaarrggh!

Film tie-ins can be a bit of a mixed bag – at least as far as this jaded old hack is concerned. They usually rely on packaging and artwork straight from the film, and gameplay straight from the ark. *Ghostbusters II*, however, is an exception. Graphics are great, gameplay is strong and varied, and cinemagoers wanting more of the same will be well-pleased.

HOWEVER, it ain't as good as *Batman*, even though I still have trouble getting Jack Napier to perform his triple back-flip half-pike into the acid bath, let alone save the entire population of Gotham City from a fate worse than compulsory Breakfast TV...

FOOT TO THE FLOOR

Domark's Tengen conversion *Hard Drivin'* has just dropped through the letterbox, and I speak to you now breathless from a blast through the stunt course.

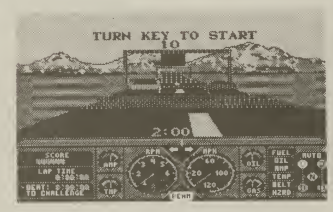
Well, actually, a blast into it. You see the scenery is ever so solid, and the road is just a little difficult to stay on.

First impressions are quite disappointing. The screen is split to show your instruments in the bottom half and the view through the windscreen in the top. Your instruments are nice and colourful, but the rest is what we in the trade call absolutely and completely mono.

That's right. It looks like a Spectrum port of a game that wasn't even written properly on the Spectrum. It's only when you get moving that things brighten up. Domark has gone for an extremely ambitious Freescape style landscape actually constructed and drawn in 3D. And thankfully the whole lot moves a lot faster than Incentive's pedestrian, but highly absorbing, releases.

In *Hard Drivin'* you only get the choice between a speed course and stunt course, but within those limits there's plenty to keep you occupied. The stunts are perhaps the most exciting option, because you not only have to perform such death-defying stunts as bridge-jumping and looping-the-loop, you also have to view the consequences of getting it wrong in an action replay.

It's a corker.



• Ready – wear a seatbelt!

BE A BRAIN SURGEON!

Topologika is doing a special deal on its adventures for the CPC for the New Year. Until the end of February, you can buy any of the following games for £11.95 (including VAT and p&p): *Avon, Acheton, Kingdom of Hamil, Countdown to Doom, Return to Doom, Philosopher's Quest, Giant Killer* and *Yes Chancellor!* Buy two and you get 10 per cent off, buy three and you get 20 per cent off, buy four or more and you get 30 per cent off. You can give Topologika a call on 0733 244682.

HOLY CHEAT!

If you want to get one step (or several steps) nearer defeating arch bad-guy The Joker in *Batman – the Movie*, hold down the following keys at any time during play: DE209. This will end your current level and plonk you down at the start of the next one. Now they tell me!

Rod Lawton

ROTARY CLUB

Here's a little password help for people getting nowhere with that cutesy blast-em-up *Mr Heli*:

```
Level 2    CACGFAAAAUAEDIADCKCY
Level 3    DECIHAFAAUAIGAADCDBR
```

YOUR FORMAT

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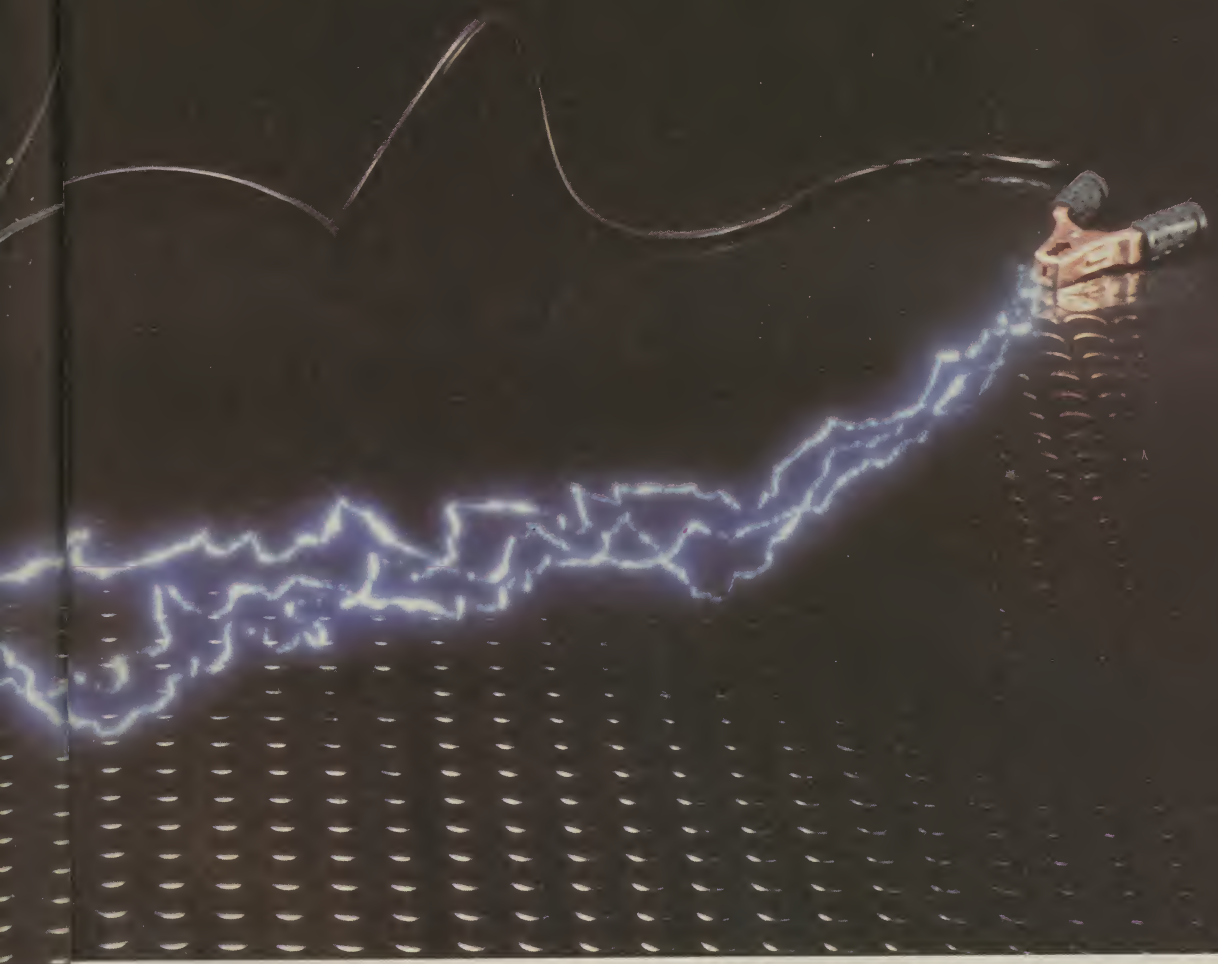

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QL

TANDATA MODEM PROBLEM

If you've got one of the Tandata modems, and have tried transferring files to another Tandata user via the telephone, you've probably found that you can't do it! QUANTA hopes to have a fix for this shortly.

PACKET RADIO UPDATE

Some time ago I mentioned that several radio amateurs with QLs are using them for packet radio. Urban Smith, a Welsh amateur, is developing software on his QL to perform most of the functions of a TNC, the dedicated microprocessor system that goes between the radio transceiver and the computer system of the user.

The QL is quite a good choice for this particular type of application, as it generates little of the type of interference that can wipe out the signal you are trying to receive.

Smith's software will include a terminal emulator, and, with the addition of a low–cost modem, will provide a very inexpensive route to a packet radio station. Similar packages have been available for some time for the Spectrum, C64 and Dragon.

PROFESSIONAL PUBLISHER

Professional Publisher, the latest desktop publishing package from Digital Precision, takes *Desktop Publisher*, Digital Precision's first DTP program, a step further. Written by Andrew Astrand, and compiled primarily in SuperBASIC with some assembly language, *Professional Publisher* is a large package and it takes up most of a 3·5-inch disk. It is only really suitable for disk systems with a 512K RAM expansion.

Some of the more important features of the package include: cameo overview (scale model of the page), direct text entry, import of QUILL files and EYE–Q screens, large selection of fonts, font editing, wrap–around graphics, snap–to guides, and layout templates.

Speaking generally, the package is organised in two parts: a tutorial section that gets you started and a cross–referenced alphabetic section. Indeed, *Desktop Publisher* comes with comprehensive documentation, and if there is no index, the manual is well organised. I didn't have any major problems in finding my way around.

Profesional Publisher is quite easy to use (being mainly menu–driven, with good help facilities), and reasonably fast in operation. Since one is generally working with a small part of the page, the cameo overview feature is very useful, showing the whole page with the text 'greeked', depicted as unreadable, inchoate splodges.

Comprehensive printer drivers are provided, and PDQL's GRAFIX driver can be used, if additional features such as anti–aliasing are required.

PP is available for £89.95 from Digital Precision, located at: 222 The Avenue, London E4 9SE.

John Torofex

C64

WALTER

My Highland friend Walter Smith had been itching to move from BASIC to machine code without getting very far. Then one of those 'choose any 3 items from only 49p each' adverts from The Home Computer Club (Swindon SN3 4BR) caught his eye. After recovering from the shock of not finding disk drives in the special offers, he did buy *Machine Language For The Absolute Beginner* by Danny Davis, and thoroughly recommends it. 'Useful' is the way Walter described it; if you want to start in machine code, then this could be the book for you.

TIME FOR A GRUE

We Infocom adventure freaks know what a Grue is, don't we? If you don't, read on anyway. Jim Macbrayne has just released *The Golden Fleece* adventure game for the Amiga (wrong machine. Ed) on public domain, and two of his earlier games for the C64 (oh, I see) are also available on public domain. If you want a copy of *The Black Tower* and *Excalibur*, send a formatted C64 disk with postage to The Grue, and he shall send you copies absolutely free.

The Grue lives at 64 County Road, Ormskirk, West Lancs. L39 1QH. He will also give help on ONLY Infocom games if you send the usual SAE. Who is The Grue? That would be telling!

THE SONZ IS BACK

The sonz is actually Sonia Griffiths-Glover, who has just resurrected the Hints\Archive for Lost Adventurers, otherwise known as HALA. Sonz offers help and solutions in return for an SAE and a solution or hint from an adventure you've played. She lives at 38 Bellfield Drive, Willerby, East Yorkshire HU10 6HQ. Feel free to write in for details.

BUSY DOIN' EVERYTHING

Robert Troughton is a busy chap. When not being editor of *The Cheat Machine* (a C64 fanzine which gives you thousands of CHEATS for various games, amongst other things) he also distributes demos for you to marvel at and tinker with.

For details write to Robert at 42 Browfield Terrace, Silsden, Keighley, West Yorkshire BD20 9PT. He might tell you to type CHEAT on the high score table in *Anarchy*, or hold down fire for about 10 seconds on *Miner 2049er* in order to advance a level, but then again, you might already know these!

WHICH WORD PROCESSOR?

I sometimes get asked to recommend a word processor for the C64. I'll tell you that I don't know which is the best one, but I've written more with *PaperClip* than with any other C64 WP. So there.

Pete Gerrard

ATARI

COMPETITION TIME

For those of you who like your flight simulation combined with good old hunt and kill gameplay, I'm giving away a copy of Digital Integration's super-fast, colourful and exciting *F-15 Flight Simulator*. Here's what to do to win the program...

Simply send two ten pound notes with your name and address to ... no, hang on, that isn't it! Just tell me who founded Atari in the 1970s and what the word 'Atari' means. Include your name and address and if you're the lucky winner picked from my hat, the software will be winging its way to you very soon.

TOP TIPS

A Ms. K. Jawa wrote in, wondering about her 1050 disk drive. After many years of sterling service, the device began to produce read errors upon disk access. She wanted to know if it was time to throw away the drive and buy one of the new 360K devices?

Actually, the drive mechanism features a pressure pad that holds the surface of the floppy disk against the read/write head. After long service this pad becomes weak, the heads can no longer contact the surface of the disk and read erors ensue.

The solution is to open the drive carefully and roughen the pad attached to the pressure pad 'arm'. One can use a nail file or similar to achieve this effect. In nine out of 10 cases, the drive will be in perfect working order after you reassemble it.

Edmund Blake

ARCHIMEDES

HITTING THE BAR

4th Dimension is about the only company specialising in Archie games at the moment, so it was with pleasure that I got my hands on the footy sim *Arcade Soccer* this week. This game claims to be football action at its very best, and it has a lot to live up to with the likes of *Kick Off* already a firm favourite of '89, though not of course on the Archie.

You can play against another human or the computer and in friendlies, challenges and the World Cup. Using the familiar 'birds' eye view' of previous soccer games, *Arcade Soccer* shows roughly an eighth of the pitch and scrolls smoothly as players move around the field.

Control passes automatically to the player nearest the ball and you can pick up a rolling ball by running into it; you can also tackle an opposing player for possession. Graphics are good, but not spectacular, while sound effects are digitised and sparse.

Once you control the ball, it can be dribbled in any of eight directions using two sets of cursor control keys or a Voltmace analog joystick. There's no mouse option, though control would be very hard with a mouse, anyway. Kick strength is determined by how long you hold the kick key or fire button down, and deft use of the keys or joystick can produce swerves.

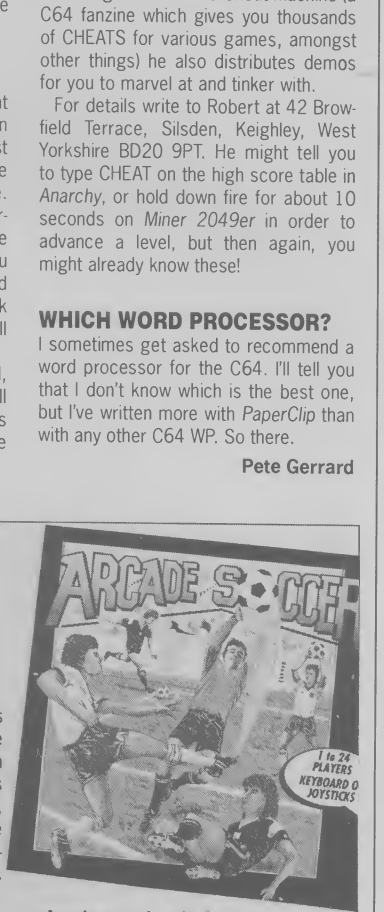
Games last from one to nine minutes per half and goals, of which there are usually many, are accompanied by an optional replay of the last few seconds of action. In among all this, though, there are a few features missing. There are no penalties, but then it's impossible to foul. This in turn is just as well as there's no ref!

Because of the swerve controls, it's not possible to change player direction while you have the kick key pressed. Players on your team have little idea of what to do if they're not under your control. They certainly don't follow the ball and it's only by virtue of strict formation discipline that you have any players available to tackle an opponent making a run on goal.

A draw provokes a sudden death playoff, and pressing a non-standard key like [Return] fills the screen with a page of code - Shum Mishtake, Shorley. All in all a decent attempt, but lacking some of the 'subtleties' of play.

RESETS AND [R]ESETS

Some games, though not *Arcade Soccer*, reconfigure an Arc before running. The naughty ones don't reset the configuration when you exit the game. Ah, but a quick Delete switch on will reset your configuration to the default. This is fine if the default configuration suits your system, but if you have added a hard disk, podule or a second floppy, the default configuration will refuse to recognise them.



• Arcade soccer! on the Archie!

What you need in this instance is the alternative R switch on, because if you hold down the [R] key while you switch on, you don't lose your configurations of Econet station number, country code, numbers of floppy and hard disks and details of expansion cards.

MORE ON P.D.

Two more sources of public domain software, of which there is a surprising amount on the Archie, are David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool FY5 1LR and Norwich Computer Services, 18 Mile End Road, Norwich NR4 7QY 0603 507057. They both offer 20 disks or so, at £3.50–£7.00 a disk from N.C.S. and £5.99 each from David Pilling. Programs range from transfer utilities to ray–tracers to disk editors to arcade games.

Bertrum Carrot

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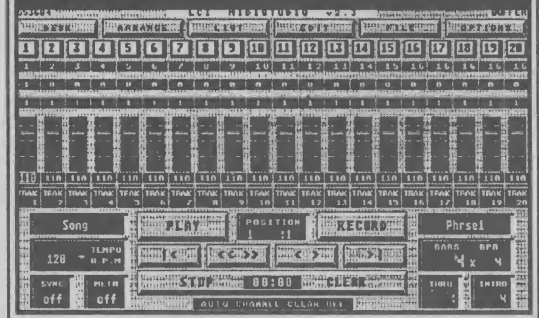

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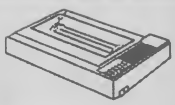

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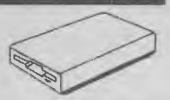

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Please note, ST's case needs cutting to accomodate the above internal drive.	
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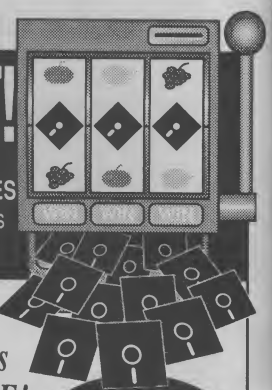

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THE SHOPPING EXPRESS BUYER'S GUIDE TO MONITORS, SCANNERS JOYSTICKS AND MICE

No computer is complete, there are always peripherals to add to make it just that bit more useable. Joysticks and mice offer control over the micro, scanners allow you to grab images for your documents and monitors let you see what's happening more clearly. For the best buys, read on...

JOYSTICKS

Joysticks, mice and trackerballs are the most common peripherals to be connected to any computer, and now come in all shapes and sizes. The vast majority of joysticks can be connected to any machine and are divided into two categories: hand-held and traditional arcade style. Increasingly the hand-held type are taking over as the most popular sticks.

KONIX NAVIGATOR

FROM Konix: 0495 350101
PRICE: £14.99

A hand-held joystick that has become one of the market leaders recently. It's been well designed to fit snugly in your hand and has a standard auto-fire feature. The design is such that it can be used by both left and right handed owners without difficulty.

▲ Excellent design
▲ Single fire button located on the handle
▲ Auto-fire
▲ Comfortable...

▼ But not to everyone

COMPETITION PRO 5000

FROM Dynamics: 061 4290981
PRICE £15.95

A standard arcade stick with a difference – it's been designed in clear plastic so that all the inner workings can be seen. Very sturdy design which stands a lot of hammering.

▲ Trendy clear-plastic design
▲ Two fire buttons located on the base
▲ Robust

▼ Can't be mounted on desktop

POWERPLAY CRUISER

FROM Powerplay: 0457 876601
PRICE £12.99

Great streamline shape with very sturdy design. Powerplay claims to have the lowest return rate of all the joystick manufacturers. A clever ring on the base of the stick makes it possible to vary the flexibility of the grip.

▲ Suckers let you bolt it onto desk
▲ Two fire buttons
▲ Unusual design and colour scheme
▲ Sensitivity control

▼ Unwieldy

TAC 50

FROM Suncom: 0666 504326
PRICE £13.99

Standard arcade-style stick. Includes microswitches that make a loud click when movement occurs. Grey colour scheme. Too flimsy for many games.

▲ Includes microswiches

▼ Noisy
▼ Stick wobbles around too much
▼ Looks very unadventurous

MICROLEISURE STARCRUISER

FROM Microleisure:
PRICE £18.95

Lots of extra features including a switch to change the direction of control – pushing forwards can be interpreted as pushing backwards.

▲ Two fire buttons
▲ Lots of features

▼ Bulky and unattractive design
▼ Expensive

QS-113 DELUXE

FOR PC compatibles only
FROM Datel: 0782 744707
PRICE £29.99

Features allow this stick to be set in either auto-centering or free-floating mode. X and Y axis can be trimmed using added switches. An expansion card is included for connection to IBM PC-XT/AT. Two 15-way D-type game ports and an on-line 3-position selectable clock speed are included.

▲ Suction pads
▲ Auto-fire
▲ Reasonably cheap for a PC stick

▼ Clumsy design

MICE

Mice are more machine-specific with each mouse being designed to be connected to a specific machine. Trackerballs are like upturned mice; instead of rolling the ball over a flat surface, its ball is rolled by hand.

SERIES 9 MOUSE

FOR: PC compatibles
FROM Logitech: 0925 413501
PRICE £91

This smooth-looking ergonomically designed mouse is one of the most popular of Logitech's design. They are claiming that some 3.5 million units have been sold worldwide. Software comes bundled.

▲ Fits easily into the hand
▲ Very good control
▲ Good looker

MICROSOFT MOUSE

FOR PC compatibles
FROM Microsoft: 0734 500741

Microsoft aren't exactly best known for their mice, but this one is another mega seller. It's been well designed to fit comfortably in the hand and glides across surface tops.

▲ Robust
▲ Functional
▲ Good bundled software

▼ Archaic design

TURBO MOUSE 2

FOR PC compatibles
FROM NTS

Instead of a roller-ball this mouse uses photo-electric cells to detect movement. Unfortunately this means that it can only be used on a special mouse mat and, due to the felt-pads underneath, it runs stiffly across this.

▲ Looks very high-tech

▼ Awkward to hold
▼ Mouse buttons are badly positioned

PC MOUSE II

FOR PC Compatibles
FROM Mouse Systems Corporation: 0256 461744

This brand-new design is claimed to be Mouse Systems' most advanced yet. It's another photo-electric cell design which has the advantage that there are no moving parts to get dirty or wear out. Dynamic acceleration gives it tight cursor control. Comes with its own mouse pad.

▲ User determined resolution from 20 to 6400 CPI
▲ Fits well into the hand
▲ Stylish

REPLACEMENT MOUSE

FOR PC and Amiga
FROM Datel: 0782 744707
PRICE: £29.99

This standard rubber coated-ball mouse is intended to replace Amiga or 1512/1640 PC mice. It sits on Teflon guides for very smooth movement and has an optical system counting of 500mm.

▲ Cheap

▼ Very poor design
▼ Difficult to use mouse buttons

➡

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REPAIRS FOR AMIGA AND ATARI

■ KEMPSTON MOUSE

FOR ST
FROM Kempston Data: 0234 841224
PRICE: £29.99

There aren't many replacement mice for the ST, but this is one of the best. Small and compact, it fits easily into the hand and can be used on a very small area. There is a noticeable difference from the standard ST mouse.

▲ Good design
▲ Only small work area required
▲ Long-lead

▼ Cheap looking

■ TRACKERBALL

FOR ST
FROM Third Coast: 0257 424442
PRICE £24.99

The Trackerball is brilliant for playing *Marble Madness* but it's not really a lot of use for much else. The unit is big and cumbersome but you don't need the sort of space which a mouse requires so things aren't all bad.

▲ Good control
▲ Sturdy design
▲ Reasonably cheap

▼ Few games play well with it

SCANNERS

With a scanners you can grab an image from a page and import it as a graphic file into your computer. Three different types exist: handheld, flatbed and printer scanners. The hand-held scanner is the most popular and is dragged by hand over an image. The problem with these is that only a narrow width can be scanned. Printer scanners fit onto the head of a printer and scan an image by forcing the print head back and forth across the picture. The quality isn't particularly good, but then they're usually cheap. Flat-bed scanners are the most reliable and most expensive. The image is scanned by passing a scanning head over the flat picture.

■ PROSCANLAB

FOR Amiga 2000
FROM ASDG: 0923 818079
PRICE £3900

This is currently the only colour scanner available for the Amiga and is a highly professional flat-bed design. Variable resolution from 30 to 300 DPI is possible. Scanning can be in one, three, eight or 24-bit mode with real-time scrolling over large images. Colour correction is possible with independent control over red, green and blue levels. Edges can be emphasised or smoothed. The four-colour separations possible are some of the best seen on a home micro.

▲ Only system to offer colour system on the Amiga
▲ Postscript compatible
▲ Software reads and writes images in any Amiga format
▲ Variable scan resolution

▼ Very expensive

■ GENISCAN GS4500

FOR Amiga and ST
FROM Datel: 0782 744707
PRICE £189.99

A hand scanner with 105mm width and 400dpi resolution. Adjustable switches let you alter the brightness and contrast of a scanned image to obtain the best results. Good software, which offers features to cut and paste selected areas of the image, is included in the price.

▲ Good results
▲ Software saves images in a variety of formats
▲ 400dpi

▼ Clumsy design

■ DAATASCAN

FOR ST
FROM Kempston Data: 0908 677886
PRICE £150

Another hand scanner with a 105mm scan strip. Kempston has just released new software to accompany the scanner. Besides the usual cut and paste features, there are options allowing you to scan over the top of other images. 200 dpi resolution is limiting even though four grey-scale options are available.

▲ Easy to use
▲ Cheap

▼ Only 200 dpi
▼ Roller can slip giving uneven images

■ CAMERON HANDY SCANNER

FOR ST & Amiga
FROM Cameron: 01-449 9192
PRICE From £199.89

The compact design is ideal, but sadly only 64mm wide strips can be scanned. Three types of grey scale are possible. Optical character reading software is bundled with the machine. This interprets text scanned into memory and translates it into ASCII characters. Cameron offers a wide range of scanners in several sizes including an A4 flatbed scanner.

▲ Good quality output
▲ Small width
▲ 200 and 300dpi resolutions

▼ 64mm scan width
▼ Hard to install

■ HS3000

FOR PC compatibles
FROM Ajwad: 01-788 1982
PRICE £215

The HS300 is much cheaper than other PC hand-held scanners and comes with the excellent Halo DPE editor. The software works in resolutions up to 300dpi, although the scanner can simulate 400dpi.

▲ Cheap
▲ Good bundled software
▲ Pseudo 400dpi mode

▼ Feels tacky

➡

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MANNESMANN TALLY MT81 PRINTER

- 9 Pin Dot Matrix
- Parallel I/face
- 155 cps high speed
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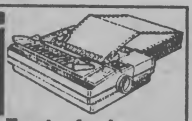

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PRICE £290

A sturdy hand-held model which fits neatly into the palm of the hand. Some very useful optical character recognition software (OCR) is bundled. The scan head isn't very large, but the software enable you to scan a large image in strips and join the bits together.

▲ Proper 400dpi scanning
▲ Good software
▲ OCR utilities bundled
▲ Comfortable to use

▼ Small scan head

SCANMAN

FOR PC compatibles
FROM Logi UK: 0925 413501
PRICE £229

The ScanMan hand-held looks good and is reasonably priced. The 400dpi scanning mode offered is simulated and the software can scan images directly into Microsoft *Windows* or its own *ScanPaint* utility.

▲ Reasonably cheap
▲ Nice looking number
▲ Scanning can take place in Windows

▼ Not true 400dpi scanning

MSF300Q

FOR PC compatibles
FROM Aptec: 01-627 1000
PRICE £1552

Aptec's flatbed scanner, manufactured by Microteck, can support up to 64 grey levels and includes graphics software for halftone and line-art applications. Expensive but then the 300dpi scans are quite something.

▲ Excellent 300dpi scans
▲ 64 grey-level scans
▲ Good software

▼ Expensive...
▼ And doesn't offer 400dpi scanning

SP-MH216AF

FOR PC compatibles
FROM Mitsubishi: 07072 76100
PRICE £689

Mitsubishi's offering is an interesting mix of the benefits (?) of hand-held and flatbed scanners. A sheet of paper (up to A4 in size) is fed through automatically, but must be guided by hand. It's not as good as a true flatbed – but for almost half the price you can't really complain.

▲ Cheap alternative to flatbed
▲ Takes A4 sheets

▼ Only 200dpi resolution
▼ Not ideal method of scanning

FX-RS505

FOR PC compatibles
FROM Panasonic: 0753 73181
PRICE £1374

Scanning at up to 400dpi is possible in 16 shades of grey. Its top resolution will become more useful as 400dpi laser printers appear. Panasonic's own scanning software, *Panscan*, is supplied.

▲ Good 400dpi scans
▲ Cheaper than 300dpi scanners
▲ Solid design

▼ Only 16 grey scales available at higher resolutions

MONITORS

There are many monitors to choose from – most offer the same thing in a different box. The majority of monitors tend to work with PCs only, however, there are various others that are suitable for connection to Spectrums, C64s, STs, Amigas and all the other home machines. There are monitors for specialist applications: large paper-white monitors for DTP, high resolution colour monitors for graphic work, compact LCD screens for portability. One of the major problems with hooking up monitors is finding the right leads. Lightwave Leisure on 051 6305003 specialises in producing leads for connecting monitors to almost any type of machine.

PRO 8CM852

FOR Amiga, C64, Spectrum, ST
FROM Philips: 01-689 2166
Price £299

A single scan-rate monitor similar to the Commodore 1084, but in a different case and with many of the esoteric functions moved from the front panel to the rear. The screen is etched rather than having the anti-glare coating of the 1084 – this gives reduced reflection from external light sources.

▲ SCART and composite input
▲ Excellent stable picture quality
▲ Good contrast and brightness controls

▼ Mono sound input and output

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FOR All machines
FROM SDL : 01-309 1111
PRICE £399

A multisync monitor that can cope with PC CGA and EGA modes, ST mono and colour modes and virtually all other home computer graphics modes. It's big and comes with a swivel stand. Numerous dip-switches at the back of the monitor allow you to make colour selection and choose the type of video input.

▲ Professional looking
▲ Solidly built
▲ Good picture
▲ Works with numerous machines

▼ Documentation is poor

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FOR All machines
FROM Taxan: 0344 484646
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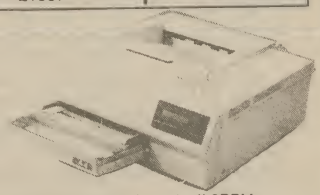

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ness controls. It can cope with high resolutions, but lacks a horizontal hold control.

▲ Excellent picture quality
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▲ Analogue and digital input

▼ Expensive
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■ ST64

FOR PC compatibles
FROM STL: 01-352 1478
PRICE £684

The ultimate in flat, thin screens. This monochrome LCD screen, which is compatible with EGA and CGA modes, is just 6.5cm deep. You are looking at the future. Lightweight and very compact.

▲ Thin
▲ CGA and EGA compatible

▼ Expensive
▼ Monochrome only
▼ VGA not supported

■ COMMODORE 1084

FOR Amiga, C64, Spectrum, ST
FROM Commodore: 0628 770088
PRICE £230

For such a comparatively cheap monitor it offers much: CVBS (composite), TLL and RGB input; stereo sound output; horizontal centring, brightness, contrast, colour, sharpness and volume controls in front; vertical height, horizontal width and vertical centring controls at the back.

▲ Good price
▲ Stereo sound
▲ Reasonable picture quality
▲ Extensive image controls

▼ Commodore badge

■ ATARI SC1224

FOR Amiga, ST
FROM Atari: 0753 333444
PRICE £299

Although it is designed to hook up to the ST, the SC1224 colour monitor works adequately with an Amiga. The picture tends to be dark, but fiddling inside the case can resolve this. The image quality when used with the ST is very sharp. Controls in the front let you change brightness, contrast and volume. The image size can be altered by fiddling with knobs at the back.

▲ Very good picture quality
▲ Matches ST's colour scheme

▼ Colours tend to be dark
▼ Expensive

■ ATARI SM124

FOR ST
FROM Atari: 0753 333444
PRICE £150

With this monitor it's possible to display the ST's high resolution monochrome mode. The picture is incredibly stable and extremely crisp – better even than the Mac Plus/SE's screen.

▲ Terrific picture quality
▲ Matches ST's design

▼ For ST only
▼ Expensive for a mono monitor

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RRP £399.00
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Includes 20 games, music software, business organizer, Hi-Soft basic
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OFFER PRICE.....£360.00

ATARI 520 STFM EXPLORER PACK
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OFFER PRICE.....£275.00

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SPECTRUM SPECTRUM +2 PACK
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+ Daisywheel printer
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OFFER PRICE.....£516.00

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MONITORS

PHILIPS CM8833
Colour Med-res
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OFFER PRICE.....£225.00
Includes lead ST/Amiga
Please state which

ATARI SM124
Mono hi-res
RRP £149.00
OFFER PRICE.....£99.00

DISK DRIVES

AMIGA
1Meg 3.5" Slimline
daisychainable, disable switch
OFFER PRICE.....£74.95

ATARI ST
1 Meg 3.5" Slimline
Joystick Powered
OFFER PRICE.....£69.95
OFFER PRICE with PSU £79.95

UPGRADES

A501
1/2 Meg upgrade with clock card
RRP £149.99
OFFER PRICE.....£129.00
1/2 Meg without clock.....£79.95
1/2 Meg with clock £89.95

PRINTERS

CITIZEN SWIFT 24 PIN DMP
Draft 192, LQ60, Friction/ tractor feed
RRP £441.00
OFFER PRICE.....£299.00
Price includes Amiga ST/PC lead, 2 year warranty

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SD COLOUR	£569
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DD MONO	£729
HD MONO	£935
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DD COLOUR	£835
HD COLOUR	£1,039

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PPC 512	DD	£499
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DD COLOUR	£775
SD EGA COLOUR	£878
DD EGA COLOUR	£930

PC10 FRAMEWORK MOUSE & MPS 1230 PRINTER

MONO	£982
COLOUR	£1189
EGA COLOUR	£1344

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Mono	£1189
Colour	£1344
EGA Colour	£1499

PC20 HD

MONO	£826
COLOUR	£982
EGA COLOUR	£1137

PC30 HD WINDOWS & MOUSE

MONO	£1240
COLOUR	£1396
EGA COLOUR	£1499

PC40 HD (VGA)

MONO	£1650
COLOUR	£1850

PC40 HD (VGA) TAPE STREAMER

MONO	£1965
COLOUR	£2195

Prices include 12 months on site maintenance

ATARI PC

PC5

DD EGA MONO	£620

PC5 HD

30 Meg HD EGA MONO	£826

PC4 HD

60 Meg HD EGA MONO	£1445
60 Meg HD VGA Colour	£1650

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All Products listed below carry a minimum 12 months return to base manufactures warranty. Please call for Optional ON-SITE-MAINTENANCE

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PC1000 -8088 512K S/D	499	799
PC2000 -8088 640K HD20	799	1079
PC100 -8088 640K S/D	399	599
PC100 -8088 640K HD30	659	899
MINI-S 640K S/D	479	779
MINI-D 640K D/D	499	799
MINI-H 640K HD20	899	1199
AT286-10 640K S/D	799	1099
AT286-10 640K HD30	1099	1359
AT286-16 1MB S/D VGA		1399
AT286-16 1MB HD40 VGA		1759
AT386-16 1MB S/D	1199	
AT386-16 1MB HD40	1549	
AT386-20 4MB S/D VGA		2229
AT386-20 4MB HD40 VGA		2559
AT386-20 4MB HD80 VGA		2999

SCHNEIDER

MODEL	MON	COL	EGA
EURO PC	349	489	
EURO AT 512K S/D	675	905	890
EURO AT 512K D/D	765	895	980
EURO AT 1MB S/D	761	891	976
EURO AT 1MB D/D	851	981	1066
EURO AT 512K H/D	975	1105	1190
EURO AT 1MB H/D	1061	1191	1276
Schneider Accessories			
3.5" External Drive			72
5.25" External Drive			99
20Mb external Hard Disk			269
40Mb External Hard Disk			379
Monitor Stand			14

All Schneider PC's & AT's include Microsoft Works, Dos & Manuals + 12 Months on-site-warranty

COMMODORE

MODEL	MON	COL	EGA
PC/XT COMPATABLE			
PC10 III-S/D 640K	444	566	687
PC10 III-D/D 640K	497	621	746
PC10 Bundles inc Framework,mouse & MPS1230 Printer			
PC10- D/D	740	896	1013
PC10- HD40MB	896	1013	1130
PC20 III-HD 640K	631	749	868
PC30 -286HD 640K	935	1052	1130
AT80286 COMPATABLE - VGA'S			
PC40 -40MB 1MB	1291	1462	
PC40 + TAPE	1559	1759	

Includes 12 months on-site-warranty

PORTABLES

MAKE	MODEL	PRICE
AMSTRAD + Phone	PPC512S	360
AMSTRAD + Phone	PPC512D	467
AMSTRAD + Phone	PPC640S	445
AMSTRAD + Phone	PPC640D	552
SHARP	4602	863
SHARP	4641	1463
SHARP	5541	2330
SHARP	7221	1699
SUPERSPORT	D/D	977
SUPERSPORT 286	20MB	2237
SUPERSPORT286	40MB	2657
TURBOSPORT 386	40MB	2797
AKHTER 286-3200	20MB	1695
SCHNEIDER	PC7640	1418
SAMSUNG S5200	32MB-AT	1693
VICTOR V286P	30MB	2499

AMSTRAD

MODEL	MON	COL	EGA	
PCW8256	310			
PCW8512	395			
PCW9512	424			
PC1512SD	360	437		
PC1512DD	437	513		
PC1640SD	451	536	621	
PC1640DD	512	597	682	
PC1640HD	682	768	853	
	Mono	Col	12"	14"
PC1286SD	750	835	920	1005
PC1386SD	1180	1265	1351	1436
PC2086SD + SOFT	531	617	702	787
PC2086DD + SOFT	595	680	765	851
PC2086HD + SOFT	765	851	936	1021
PC2286DD	851	936	1021	1106
PC2286HD	1021	1106	1191	1276
PC2386HD	1702	1787	1872	1957

All Genuine Models Not upgraded in any way

HYUNDAI

Note. Base units only. Monitors are Seperate

Model	Mono	Col	Ega	Vga
SUPER 16-TE PC/XT 640K 10Mhz Metal Case				
Super 16-TE S/D	361	361	455	511
Super 16-TE D/D	430	430	524	580
Super 16-TE HD30	561	561	655	711
286C 8/10MHZ 512K RAM				
286 S/D	749	749	749	859
286 HD30	949	949	949	1059
386SX 8/16 Mhz 1MB RAM				
386 S/D	959	959	959	1069
386 HD30	1159	1159	1159	1269
386C 8/20Mhz No Wait States 1MB Ram Vga				
386C S/D	1279	1279	1279	1279
386C HD40	1599	1599	1599	1599

SAMSUNG

MODEL	Mono	Cga	Ega
All the following Systems are without Monitors. Please refer to monitor box			
PC/XT			
SPC3000/1 S/D	405	405	
SPC3000/2 D/D	473	474	
SPC3000/3 HD20	677	677	
AT80286 10Mhz			
MFC6000/1 S/D	812	812	
MFC6000/2 S/D	1015	1015	
SPC6500/3 HD20	1151	1151	
AT80286 12Mhz 1MB VGA			
SPC6512/1 S/D	1015	1015	
SPC6512/3 HD20	1219	1219	
SPC6512/4 HD40	1354	1354	
AT80386 20Mhz 2MB EGA			
S800 D/D	1693	1693	1693

All Samsung Computers include 12 months on-site-maintenance

MITAC

MODEL	MON	COL	EGA
MITAC 88 512K	586		
MITAC 88 20MBHD	790		1102
MITAC 1000L PS/2	730	930	VGA'S
MITAC 1000L PS/2	963	1163	VGA'S
MITAC 286SL HD20	1030	1209	1332
MITAC 286SL HD42	1163	1342	1465
MITAC 286V HD42	1463	1663	VGA'S
MITAC 286V HD102	1930	2130	VGA'S
MITAC 286VEHD42	1596	1796	VGA'S
MITAC 286VEHD102	2063	2263	VGA'S
MITAC 386 HD42	2330	2568	VGA'S
MITAC 386 HD102	2796	3130	VGA'S

All MITAC Systems come complete with 12 Months on-site-warranty

VICTOR

MODEL	MON	COL	EGA	VGA
VPCIIC S/D	949	1149	1399	1449
VPCIIC D/D	1099	1299	1549	1599
VPCIIC HD30	1499	1699	1949	1999
V286C S/D	999	-	1299	1499
V286C D/D	1499	-	1799	1999
V286C HD30	1999	-	2299	2499
V286C HD50	2199	-	2499	2699
V286A HD30	2099	-	2549	2599
V286A HD50	2299	-	2749	2799
V286S HD50	2499	-	2949	2999
V286S HD70	2699	-	3149	3199
V386S HD50	3299	-	3749	3799
V386S HD70	3699	-	4149	4199
V386S HD110	3899	-	4349	4399
V386S HD230	5299	-	5749	5799
V386T HD70	5999	-	6449	6499
V386T HD230	7699	-	8149	8199
30MB ADD-PAK	399			

MONITORS

MAKE	12" Mon	14" Mon	14" Cga	14" Ega	Mono Vga	Colour Vga	Mult Sync	
PHILIPS	7502	7713	8833	9093	7749	9609	-	-
	£63	£89	£199	£296	£116	£296	-	-
	7513	-	9043	9043	-	9809	-	-
	£77	-	£261	£261	-	£374	-	-
	7913	-	9053	9053	-	-	-	-
	£81	-	£296	£296	-	-	-	-
SAMSUNG	2573	4573	-	4531	2611	4531	4551	
	£76	£85	-	£299	£85	£299	£397	-
AMSTRAD	12MD	-	14CD		12HRCD	14HRCD	-	-
	£119	-	£199	-	£294	£383	-	-
AKHTER	ACL12G	ACL14G	VISION	ACL-E	-ACL-VM	ACL-V	ACL-M	-
	£60	£85	£199	£259	£110	£289	£355	-
HITACHI	-	-	-	-	-	480AUTO	-	-
	-	-	-	-	-	£358	-	-

Notice: All Samsung Monitors come with 12 Months on-site-maintenance

ATARI & AMIGA

MODEL	PRICE
ATARI 520ST-FM + Power pack	309
AMIGA 500 + BATMAN pack	318
1MB External Diskdrive Amiga	63
1MB External Diskdrive Atari	71
42Mb External Harddisk both	399
Amiga to Scart Monitor Cable	7.69
Atari to Scart Monitor Cable	7.69
Amiga Dustcovers	4.95
Competition Pro Extra Joystick	10.59
Philips CM8833 Colour/Stereo	199
Atari SM124 Highres Mono	115

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Model	PRICE
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Acco -In line 64K Buffer Par	95
Logitech serial mouse + software	73
20Mb Hardcard 2yr warranty	189
30Mb Hardcard 2yr Warranty	195
5.25" 1.2Mb Floppy Drive	59
3.5" 720K Floppy Drive	59
3.5" 1.44Mb Floppy Drive	69
102 Key Keyboards PC/AT	55
512K to 640K Memory Upgrade	29
Mouse Matts	4
80 col Printer Muffler	49
132 Col Printer Muffler	53
80 col desktop printer stand	28
132 col desktop printer stand	32
Screen Filters	Call
Electric A4 Copy Holder	94

NOVEL NETWORKS

NETWARE 386 V3.0	4020
NETWARE SFT V2.15	2596
NETWARE ADVANCED V2.15	1660
NETWARE ELS LEV II V2.15	864
NETWARE ELS LEV I V2.0A	338
NE 1000 ETHERNET CARD	185
NE 2000 ETHERNET CARD	286
NE/2 ETHERNET CARD	286
NE 1000 COMPATABLE	139
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COMMS PRODUCTS	CALL
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XTRIEVE FILE MANAGEMENT	CALL
REPORT GENERATORS	CALL
XQL DATABASE MANAGEMENT	CALL
UPGRADES	CALL

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Xerox Ventura V2	520
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Timeworks DTP	79
Framework III	325
Paradox 3	357
Supercalc 5	238
Smart System V3.1	350
Sage Sterling Bookeeper	64
Sage Sterling Payroll2	129
Sage Sterling Job Costing	129
Sage Sterling Accountant	162
Sage Sterling Accountant+	259
Sage Sterling Fin Controller	324
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Sage Invoices 2part-£33,3-£47,4-£62	

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Wordstar 2000 V3	245
Word Perfect V5.0	255
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Mirror III UK	130
Norton Advanced Utilities	67
Sidekick Plus	78
Office Works	185
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Crosstalk XVI	69
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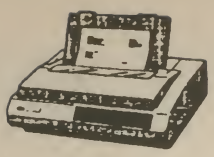

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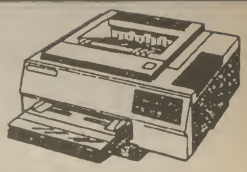

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STAR LC10-Colour	144/36	159
STAR LC15	180/45	249
STAR FR10 *	300/76	289
STAR FR15 *	300/56	379
24 PIN DOT MATRIX		
STAR LC24-10	200/67	189
STAR LC24-15	200/67	319
STAR XB24-10 *	240/80	375
STAR XB24-15 *	240/80	495
LASER PRINTERS		
STAR LASER 8 *	8PPM	1198
STAR LASER 8DB *	D/BIN	1685

* = Includes On-Site-Maintenance

PANASONIC

MODEL	SPEED	PRICE
9 PIN DOT MATRIX		
KXP 1081	144/28	118
KXP 1180	192/36	144
KXP 1592	216/45	249
KXP 1595	288/65	309
24 PIN DOT MATRIX		
KXP 1124	192/63	220
KXP 1540	288/65	400
LASER PRINTERS		
KXP 4450 *	11PPM	1269

ON-SITE-MAINTENANCE

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CITIZEN

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120D PAR	120/25	102
120D SER	120/25	119
180E PAR	175/30	123
180E SER	175/30	149
MSP15E	160/40	164
MSP40	240/40	199
MSP 45	240.40	239
MSP 50	300/60	285
MSP 55	300/60	399
24 PIN DOT MATRIX		
HQP 40	200/65	259
SWIFT 24	160/60	245
LASER PRINTERS		
OVERTURE 106	6PPM	930
OVERTURE 112	12PPM	1289

EPSON

MAKE	SPEED	PRICE
LX 400	180/30	130
LX 850	240/48	178
FX 850	264/54	351
FX 1050	240/48	293
EX 800	300/60	402
EX 1000	300/60	530
DFX5000	533/400	1087
LQ 400	180/60	189
LQ 550	180/60	255
LQ 850	264/88	394
LQ 1050	264/88	543
LQ 860	290/88	499
LQ 1060	290/88	639
LQ 2550	400/133	831
TLQ4800	250/83	1437
SQ 850	600/198	575
SQ 2550	600/198	863

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HEWLETT PACKARD

MODEL	SPEED	PRICE
THINK JET		254
QUIET JET		334
QUIET JET +		398
DESK JET		434
DESK JET +		519
PAINT JET		644
RUGGED WRITER		849
LASER PRINTERS		
LASER JET IIP	4PPM	879
LASER JET II	8PPM	1248
LASER JET IID	8PPM	1879

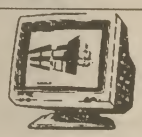
All HP's Include On-Site-Maintenance

OLIVETTI

MODEL	SPEED	PRICE
DM100SPR	200/30	123
DM105SPR Colour	200/30	154
DM282	240/40	216
DM282S	240/40	245
DM292S 136 col	240/40	307
DM250	240/60	402
DM250L 136 col	240/60	458
DM400 136 col	400/100	867
DM704 136 col	400/100	1053
DM309	360/66	269
DM309L 136 col	360/66	356
LASER PRINTERS		
PG 306 *	6PPM	899
PG 208 *	8PPM	1199
PG 303* Postscript	8PPM	2595

CANON

MODEL		PRICE
CANON LBP4	4PPM	895
CANON LBP8 III	8PPM	1390
CANON LBP8 IIIT	Dual Bin	1815
CANON LBP8 IIIR	Duplex	1923
CANON BJ-130	220/110	539
CANON IX-12 Image Scanner		374
CANON IX-12F Image Scanner		752
CANON IX-31F Scanner Int/face		113
CANON OCR Software		304



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MODEL		PRICE
EPSON GQ5000	6PPM	1119
MT905	6PPM	889
SHARP JX-9300	6PPM	1063
KYOCERA F1000	10PPM	1459
KYOCERA F1200	10PPM	2369
KYOCERA F2200S	10PPM	2569
KYOCERA P2000	10PPM	3969
BROTHER HL-8e	8PPM	1369
BROTHER HL-8D	8PPM	2189
BROTHER HL-8PS	8PPM	2524
BROTHER HL-8QS	8PPM	2929

LASER TONERS
Canon SX Toner £59, Panasonic £32
MT905 £24, Epson GQ3500/5000 £16
Kyocera 2pack £69 Citizen £22

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Unique Mercury compatable
Special 16-shade half tone feature
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MODEL		PRICE
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Hitachi 681-A4/A3	400mm/sec	559
Hitachi 673-A4/A3	400mm/sec	699
Hitachi 674 A1/A4	400mm/sec	2699
All above plotters have on-site-replace		
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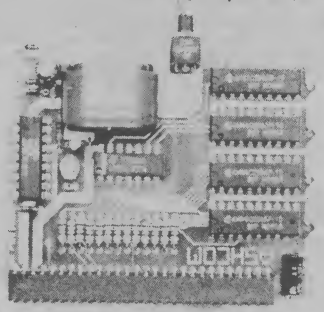

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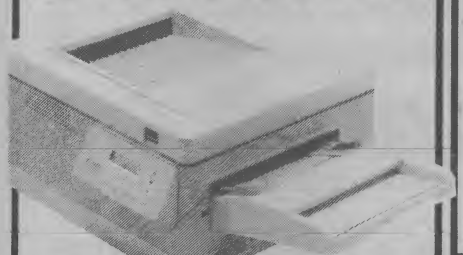

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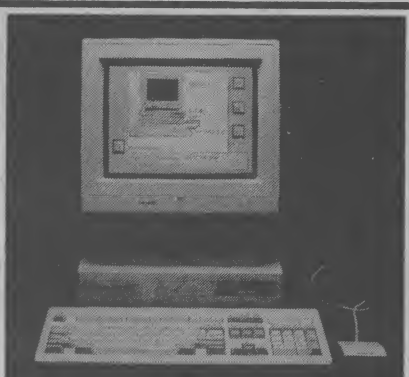

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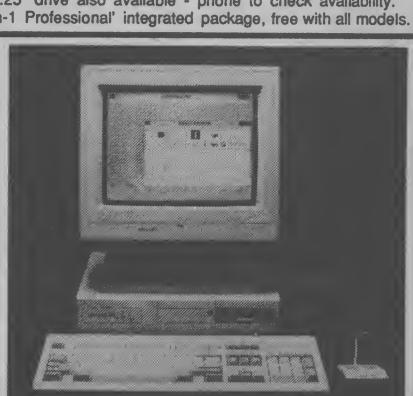

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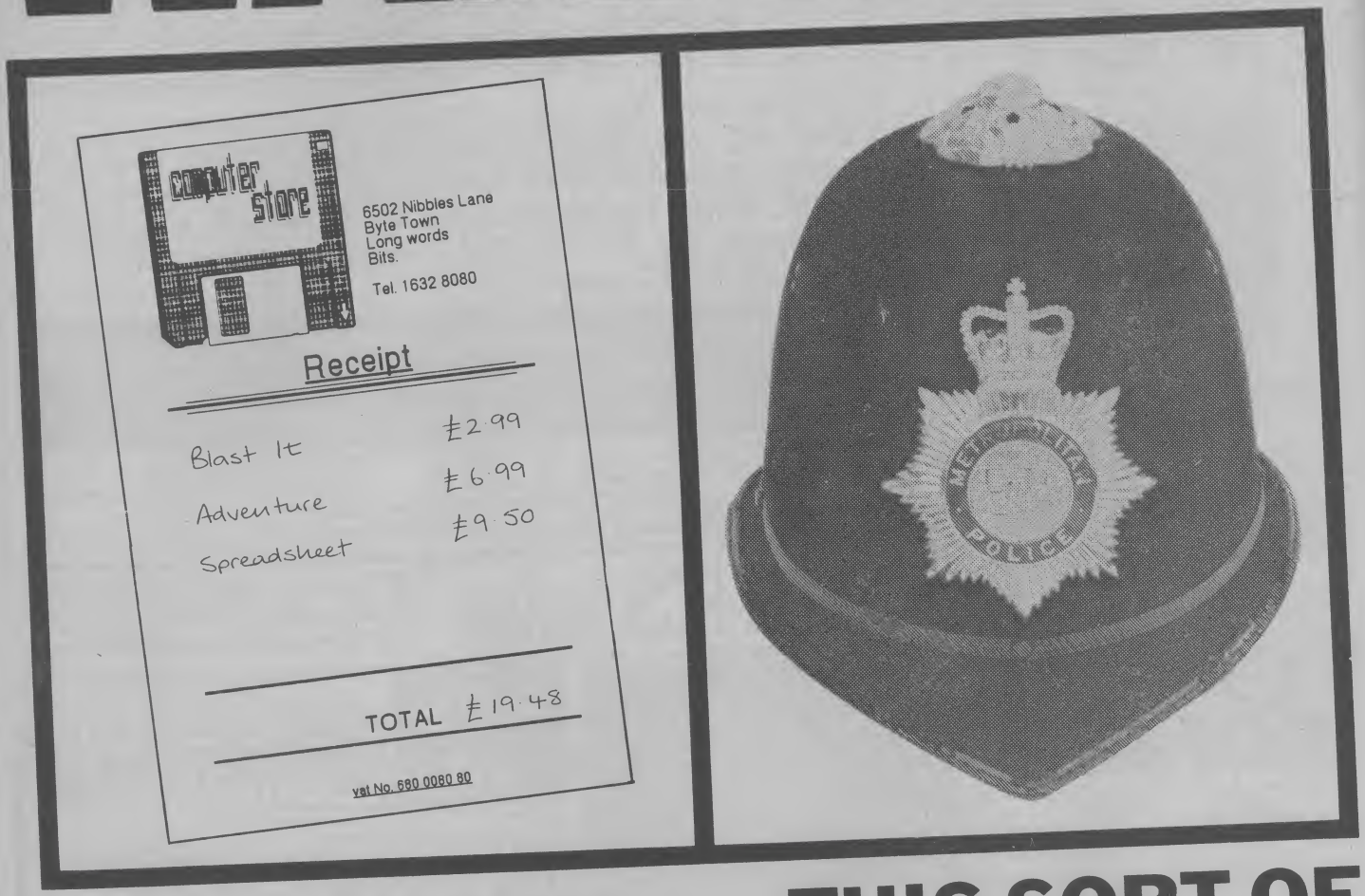

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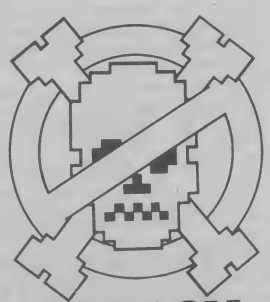

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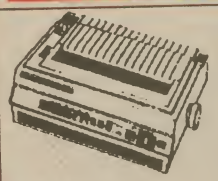

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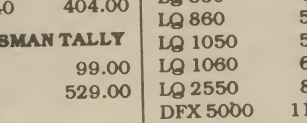

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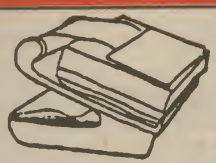

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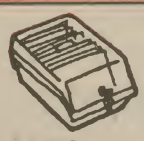

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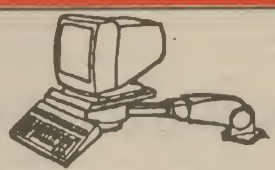

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HELP WANTED

I want a good, fast, honest 64 contact on tape. I've got a lot of the latest stuff. Nicola Walker, 16 Grove Park, Ederney, Co Fermanagh, N.Ireland.

ANY one seen the Robotech demo. No! Well check out page 6 P.D. for it. Also any one out there seen or heard anything about Robotech then write to me now! R Mitchell, Flat 32c, Brooke Court, Milton Groove, Highfields Stafford, Staffordshire.

HELP needed with Z80 machine code to process maths functions Sin, Cos and Tan also floating point please write to Wayne, 61b The Avenue, Wraysburt Staines, Middx. TW19 5ES. A.S.A.P.

I am in the process of buying an Amiga 500, dealer has suggested buying a Philips CM8833 monitor. Is this monitor as good as the Commodore 10845 for Sound/Graphics. K Green, 10 Teesgate, Thornaby, Cleveland TS17 9AN.

ANY information on the Centronics Printer model no. 152.2 please phone Steve on Bas (0268) 417747 eves only.

COBOL compiler needed. Can anyone help me find a Cobol compiler for my Amiga A500. PD or commercial program. Please help tel 0915 818765 Peter.

CURIOUS student wants to hear from hardened hackers on how to crack a Nimbus Network. Jon, 26 Tower Lane, Bearsted, Maidstone, Kent ME14 4JH

AMIGA 500 help info and / or copy of BBC Emulator prog. to run BBC Education prog. own Amiga 500. John Windsor, 4 Fairoak Grove, Bassaleg, Newport, Gwent NP1 9JH tel: 896513.

WANTED manuals, Flight Simulator II, Degas Elite, Music Studio, Silent Service, all for ST, will pay by Sony DS DD 3.5 disk for each, Michael Bartek, 30 Lyndhurst Road, London NW3.

PC contacts wanted to help out new Amstrad 2286 owner to get started with software etc. Please write to Shane Comins, 29 Linden Avenue, Whitstable, Kent CT5 1RX.

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ATARI ST contacts wanted to swap hints and tips on games. All letters answered write to Ross Biddle, Tasburgh Hall, Tasburgh, Norwich, Norfolk NR15 1NA or phone (0508) 470574 after 6pm.

AMIGA 2000 start-up sequence wanted for work bench13 with Rad and Janus handler set up. All attempts have failed; will supply original. Tel: 0394 270151 x 230.

AMIGA stuff wanted send disks or lists to Jay, 6a Clifton House Close, Clifton, Beds. SG17 5EQ. Also want graphics demos etc.

ATARI ST + Amiga contacts wanted, especially newcomers to 16-bit, 101% reply. Send Stamp - (Please), write to D, 3 Mosslingal, East Kilbridge, Glasgow, GT5 0HH (Don't delay).

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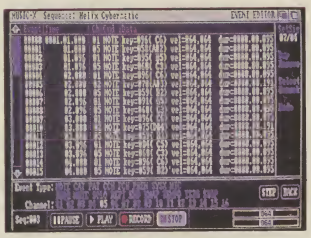
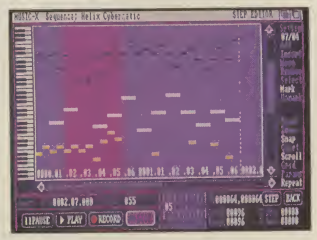
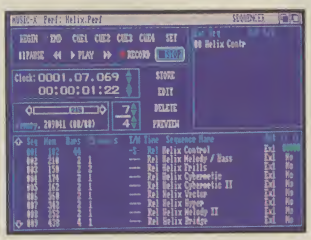


EVENT EDITOR: *An event-specific sequence editor that allows quick microscopic detailing of MIDI data.*

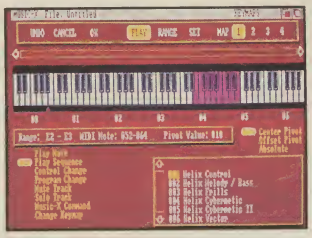


BAR GRAPH EDITOR: *An intuitive display of notes information which can be manipulated with the mouse. Visually cut and paste sections of any size.*



SEQUENCER PAGE: *Record up to 250 working sequences. Play any 20 simultaneously.*

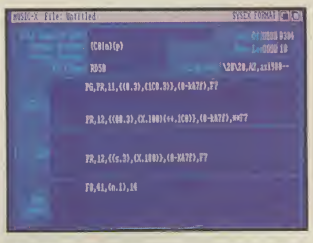
FILTER PAGE: *Redirect or filter out any incoming MIDI data.*



KEYBOARD MAPPING MODULE: *Interpret input from your mother keyboard any way you desire, you can even trigger whole sequences from one key. Create up to 128 splits across the keyboard (one for every possible MIDI note).*

AMIGA SAMPLES PAGE: *Load up to 16 amiga sampled sounds to be played internally by Music-X.*

LIBRARIAN PAGE: *Load and save system exclusive data for any MIDI instrument; keyboards, drum machines, synthesizer modules, samplers, effects units.*



SYSTEM EXCLUSIVE FORMAT PAGE: *You can teach the librarian how to communicate with any MIDI instrument which outputs system exclusive data.*

PATCH EDITOR MODULES: *Edit own synthesizer patches directly from this page.*

— AVAILABLE NOW! —

MUSIC-X, by Microllusions, is available now from most music dealers and Commodore Amiga dealers throughout the UK. When you visit your local dealer, ask for the Music-X product brochure and press review which give full details of this powerful new product. If your local dealer does not have these brochures and you would like to receive them FREE OF CHARGE, complete the coupon and return it to:

Microllusions, PO Box 400, Southampton, SO9 1BH

microillusions

To: Microllusions, Dept NCE 1289, PO Box 400, Southampton, SO9 1BH

PLEASE SEND ME

FREE BROCHURES ON THE AMIGA AND MUSIC-X

Mr/Mrs/Ms: ..... *Initials:* ..... *Surname:* .....

Address: .....

.....

.....

..... *Postcode:* .....

Do you already own a computer
If so, which one do you own? .....

TECH TIPS

Personal computer problems? Express's Agony column has the answer. Write in strictest confidence to Uncle Techtip. The best tips win a freebie – so don't forget to tell us your address and machine

HELP! Olivetti spaghetti

I have the opportunity of purchasing an Olivetti electric typewriter (model ET109) from work.

I am a Commodore Amiga owner and wonder if the typewriter can be connected to the Amiga to function as a printer (but I understand that only A4 sheets of paper can be used).

If this is possible, what connections and interfaces would be required? Please help, as I am unable to obtain an answer from local computer retailers.

Andre Helps, Hemel Hempstead, Herts.

The ET109 was one of the many quality electric typewriters produced by Olivetti in the late 70s and early 80s before the company discovered the more lucrative personal computer market.

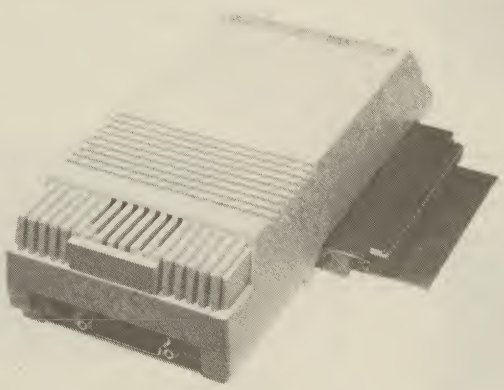
It is possible to connect the ET109 to your Amiga and to effect this connection you must create a suitable serial cable to transfer data from one machine to the other.

Pop along to a local electronic components supply shop or purchase the latest edition of the Maplin catalogue (Maplin is a huge mail order components supplier justly famous among techno-tinkerers for years) from any branch of WH Smiths. You need to obtain two D-type 25-way serial connectors and a length of cable containing at least three wires.

Use a soldering iron and the cable to join the two serial connectors in the following way: pin 2 to pin 3, pin 3 to pin 2 and pins 7 together.

Any software that you use must be able to support a serial printer otherwise all data will be sent to the parallel port of the Amiga and the Olivetti won't have anything to print.

By the way, if you're being offered this typewriter for £10 or £20 then go ahead, buy it. If, on the other hand, you're about to part with £30 or £40, don't! A glance at the *Express* classifieds will show you that it is possible to pick up a proper printer second-hand for a reasonable sum, which will connect to your computer easily, will be faster than the typewriter and will accept different paper types. Think before you buy...



• The Commodore A590: tips for turning it off

TIP Hard drivin' on the Amiga

Here's a tip for owners of Commodore's excellent piece of hardware, the A590 hard drive.

If you are experiencing loading problems with certain programs from floppy disks while the A590 is connected, i.e. *Deluxe Print* and certain games, there's no need to disconnect the hard drive to run the programs that won't work. Here is what to do:

• Run Xcopy II, then click on the box marked Kill Sys. The screen will blank for a few seconds, then return without any colour.

• Click the mouse pointer in the extreme left upper corner. The machine will reset with the Kickstart prompt and the Amiga will no longer recognise the A590 as being connected.

This tip has solved all my loading problems on my system, which has the 1.3 Kickstart and auto-booting.

Graham Woodcock, Barnsley, South Yorks.

TIP GuLPing down

I read Mr I. J. Salmon's letter featured in Tech Tips *Express* 55. I have an unused tractor feed unit for the GLP Centronics dual serial/parallel printer which may possibly be of the same construction as required by the GLP II.

Will you either publish the gist of this letter or relay same to the enquirer, who if interested can have a photocopy of the page of the manual illustrating the unit, to ascertain its suitability.

G. A. Jenner, 130 Hart Dyke Road, Swanley. Kent BR8 7DF.

Letter published and thanks very much for your help.

TIP Commodore ST

I would like to tell Commodore Amiga owners of a device called Stiky which allows access to all Atari ST programs for use with your Amiga. If you would like one of these devices, the address is TWR, 4319 Old Milford Mill Road, Baltimore MD 21208. Telephone 010-1-301 484 9651 and ask for a full colour catalogue as they also have lots of good software to offer.

Kurt Hennig, Colchester.

HELP! Keeping tally

I have a Mannesman Tally MT81 printer which I am very pleased with but am experiencing a particularly annoying problem.

The printer is capable of emulating the Epson FX85 and IBM Proprinter and a default setting can be chosen by altering the dip switches. Many of the programs I use have different drivers – some for FX85 mode, others for Proprinter mode. I need to be able to use all of these programs without constantly resetting the dip switches. How can I do this from software? Incidentally, the owner's manual is very sparse and lists only a few control code sequences – none of which alter the emulation mode.

Now for a tip. Other MT81 users may be having a problem in finding ribbons at reasonable prices, if indeed they can find them at all. The solution is to contact Novatech at 31 Holly Drive, Waterlooville, Portsmouth PO7 8HN. This company is stocking MT81 ribbons at almost half the standard price (at £2.95 each for less than 12). Alternatively, ribbons for the following Commodore printer models are identical: MPS, MPS 802 and MT80 *(Now you know whose printers Commodore re-badge – Unc).*

P. Bocij, Normanton, Derby.

Thanks for the tips. As far as I can ascertain, the MT81 printer modes can't be selected via software control. The manual as you say, doesn't list any control code sequences to achieve this, so unless anyone has discovered a way of performing the feat by accident (or talented tinkering) I'm afraid you'll have to continue with the dinosaur method of flicking switches – and you thought computers were about saving time and energy.

HELP! RAMmed home

I wrote to Santa Claus asking him for a half meg RAM expansion board with clock to upgrade my computer. He quickly wrote back asking whether I wanted one for £69.95 from the place down the road, or the official Commodore A501 for £119.95. So I ask you, what's the difference between the two, besides the price? Which is the best value for money? Why is there such a great difference in price between the Commodore version and other makes?

Ben Coudall, Cirencester, Gloucester.

Tell the kindly old gentleman to buy the £69.95 RAM expansion from 'down the road' as you so quaintly put it. Computer manufacturers will always charge more for products bearing their badge, to take advantage of those who feel safe buying all their peripherals from the same company that produced their computer. It isn't very nice, but there you are. At least there are others around producing the equivalent goods cheaper.

HELP! ST CGA?

At home I am an Atari 520STFM user with a double sided internal drive. At work, we are currently upgrading our original IBM PCs and XTs (not clones) to the new IBM PS/2 286/386 machines, which means that the old machines will be auctioned off at discount prices.

My questions are:

1. Would I be able to use the IBM CGA colour monitor with my

• No need to wait – dive in and buy an ST now!

HELP! Buy now?

I am hoping to upgrade to an Atari 520STFM by Christmas but I've heard about the 520STE with a built in blitter and also a larger colour palette for the same price. Is it worth waiting for it to arrive?
N. Diep, Stretford, Manchester.

No. Although the STE is potentially a more powerful machine, it will be a long time before software houses take advantage of the extra abilities and provide software which really opens up the machine. The STFM is here and now. It's relatively cheap and there's lots of software. Buy it and enjoy it...

Atari? The plug at the computer end appears to be a 9-pin device which is moulded into the monitor at the other end. Presumably, I would have to get the special Atari 13-pin plug if it is possible.

2. Also included with some machines is a device called a Honeycomb which you may also know as a Bernoulli box. This is essentially a removable hard drive with two 20Mb disks and is similar to a device I had seen advertised for the Commodore Amiga some months ago. Again, is there a suitable interface card I could purchase which would allow me to use the Honeycomb with my Atari ST?

I regret that I am not an expert electrician and so any out-of-the-box solutions or addresses of companies who can help me would be much appreciated.
G. A. Nash, Romford, Essex.

Good news and bad news I'm afraid so let's get the latter out of the way first and end on a happy note.

Abandon the idea of acquiring for your ST a cheap colour display. The IBM monitor is an analogue device that simply can't accept the digital signals transmitted by Atari's ST. There may be electronics specialists around who would charge you an enormous sum for a custom interface box, but you could probably buy a dedicated ST colour monitor for the same price (or one of the combined TV/RGB-composite displays, justifying the cost by using it as a television when the computer is not in use). Nice try, GA but it just won't work

But now, some good news. You will be able to use the Honeycomb hard drive but you must obtain a suitable interface in order to do so. Contact Third Coast Technologies on 0257 424442. The company markets a range of complete hard drives and interfaces to enable you to connect your own device. If you do decide to buy an interface, don't expect to see much change from a couple of hundred pounds.

TIP Comms capers

Here is some information on using the two player option with the *Falcon* flight simulator and the Commodore Amiga. The Amiga version only works with one megabyte of memory. To make a null modem cable, connect two female serial sockets as follows: pin1 to pin 1, pin 2 to pin 3, pin 3 to pin 2, pin 4 to pin 5 and pin 5 to pin 4. Set up the comms menu to the required computer formats and set the baud rate to 19200 baud and highlight direct connection on both computers. Go through the pilot selection/take off procedure and when you have both done it, test if it has worked by not touching any controls. Soon you will make visual contact because you start off flying directly at your opponent's plane.
A. Rollings, Bracknell, Berkshire.

HELP! TV twiddle

Is there an easy adjustment (something to twiddle inside?) to cure the terrible hum on the sound through the television speaker from my Spectrum +2? It has always had this fault and I should have taken it straight back to the shop.
John Harrison, Warrington, Cheshire.

Nothing that you can twiddle, but if you can get at the two wires which transmit sound to the speaker you could solder a small resistor (100 ohms or so) in series with one of the wires.

Simple to do, not incredibly effective but it lets you have sound from your Spectrum and lose some of the buzz accompanying it. The buzz was a fault in most early Spectrums.

HELP! Ms. X

I have an MSX HX-10 and I would like to know how to use the various token values located in the BASIC program storage area to locate the appropriate ROM routines to which they relate.

For example, in a line of BASIC:

```
10 PRINT "A"
```

the token for print is 145 or 91hex but this value differs from that given in a text book I have on programming the MSX system, which calls a ROM routine stored at 0A2hex to print on screen a character whose code is held in the accumulator.

There are other ROM routines that I would like to call from machine code programs not listed in my book such as LPRINT.
A. D. Quayle, Penzance, Cornwall.

You appear to have hold of the wrong end of the stick through misunderstanding the use of the word 'token' when applied to BASIC commands. The token of a BASIC statement is not the address in ROM where the command's machine code routine is held, but simply a short hand method of storing, using and manipulating the command name itself without having to use more memory than is necessary. If stored in full, a command such as print would require five bytes of memory. But by assigning an integer token (an integer is a whole number within the range -32000 to +32000) to represent the command, it requires only one byte to store it.

To discover the whereabouts of the various machine code routines stored in ROM, you will need a memory map, that is, a list of each location and its function within the system. Unfortunately, I don't think a memory map has been published for the MSX range. Computer hobbyists are an inquisitive lot, however, and someone, somewhere will have compiled a list of interesting ROM locations – perhaps that person would like to let me have a copy of it for publication in a future Tech Tips.

HELP! Bank job

I am interested in purchasing a computer system which has the ability to read and write information onto magnetic tape cards, the same as those used for bank cards and NI cards. Could you tell me if you know of any firms which deal in such equipment.
Stephen Newton, Oldham, Lancs.

Almost all computers have the ability to read and write magnetic cards if they're connected to a magnetic card reader, a device which transfers serial signals to and from the magnetic strip on the reverse of the card.

However, magnetic card readers cost many hundreds of pounds, so your best course of action is to contact one of the specialist second hand computer suppliers such as the Morgan Computer Company in Tottenham Court Road, London (call 01-636 1138). This company has a wide range of used computer equipment, including – from time to time – some very exotic devices, all at a reasonable price.

I must confess though that I can't think of a legal use for reading and writing magnetic cards, although the illegal uses are endless...

HELP! Getting an Atari to talk to a Star

I own an Atari 520STFM and a Star LC-10 mono printer. When I print a document with *First Word* using the Epson LX-80 printer driver it does not print out any symbols like the full box and the half and quarter signs. Could you please help me with my problem?

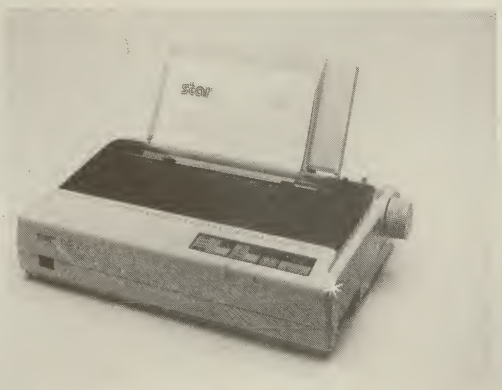
It also does this if I use any of the other printer drivers supplied. Should I be using a special LC-10 printer driver?
Philip Chung, Cheltenham, Gloucester.

Unfortunately, you've just discovered why it is wise not to believe everything you read in the advertising blurb distributed by computer and peripherals manufacturers. Although the Star LC-10 is an excellent printer and it is claimed to be fully Epson compatible, no machine is fully Epson compatible unless it has a genuine Epson badge.

In order to get the printing effects you require, you will need to obtain (or construct) a dedicated printer driver for the Star.

To make your own, first examine the drivers provided with *1st Word* by reading them into the word processor (do not make any alterations to these). Study the layout and copy it substituting the relevant Star control codes. Save this driver as an ASCII text file rather than a word processor file and you should have a driver that will do the job.

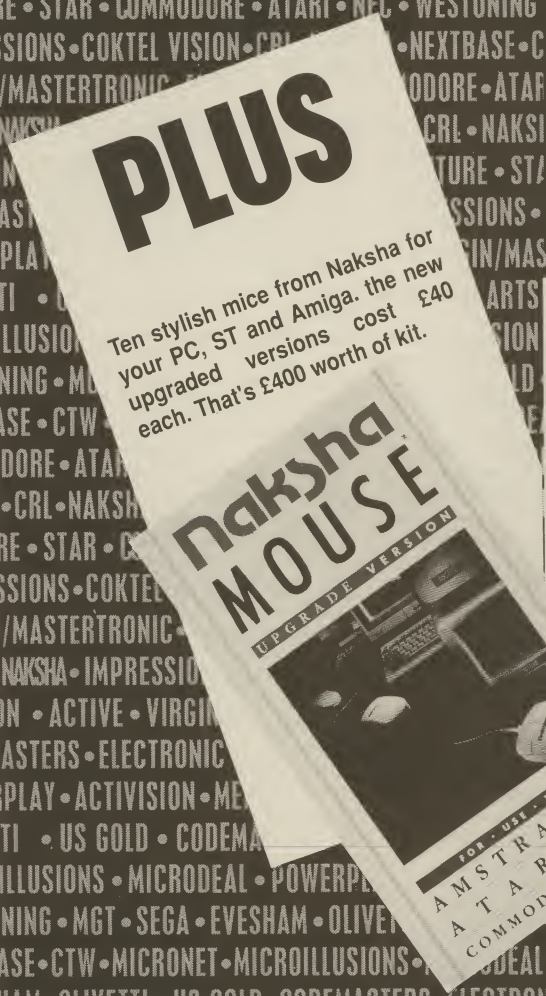
If the prospect of digging among printer drivers and printer control code manuals is akin to inserting your head into a lion's mouth, then try contacting one of the many public domain libraries specialising in software for the Atari (such as Goodman PD at 16 Conrad Close, Longton, Stoke on Trent). Many others have created printer drivers before you and some of them have been thoughtfully released into the public domain. As both the Star printer and *1st Word* word processor are incredibly popular packages, there will be a multitude of drivers to work with both of them. For the price of a disk and copying, the driver will be yours.



• *The Star LC-10: compatibility problems*

WIN £12000!

Here it is, the final part of the incredible Express competition. You should now have the answers to questions 1-20 on the official entry card that came with issue 55. Now you're just 10 questions away from winning something in our £12,000 giveaway! The prizes include an Olivetti PC1, an Amiga Batman pack, a PC Enginen, a SAM Coupé, a Star LC-10 printer and many others


PLUS
Ten stylish mice from Naksha for your PC, ST and Amiga. the new upgraded versions cost £40 each. That's £400 worth of kit.
Naksha MOUSE
UPGRADE VERSION
FOR USE WITH
AMSTRAD PC
ATARI ST
COMMODORE AMIGA

ALL THIS MUST BE WON!
These are just some of the goodies you can win in our great Christmas Competition. In conjunction with the companies here we're offering the best software and hardware we've seen all year – over £12,000 worth in all!
All you have to do is answer 30 simple questions between now and December 31st to enter, you need the card that came on the cover of this issue of Express. Questions 11-20 will be in next week's Express, and 21-30 in the week after that.
QUESTIONS

QUESTIONS

21. *Lancaster*, a bombing extravaganza from CRL, is one of the prizes. What was a Lancaster?
A A plane used in the last war
B A special kind of pie made from black pudding, Eccles cake and parkin
C A clog worn by workers in textile mills

22. One of two Micronet subs could be yours. What does modem stand for?
A MOdulator-DEModulator
B The Queen
C No nonsense

23. Ten copies of *Kenny Dalglish* from Impressions are up for grabs too. What football team does Kenny manage?
A Liverpool
B Accrington Stanley
C North Ferriby United

24. Naksha's mouse is another of the great prizes. The word 'naksha' is Hindi for 'world'. Which of the following is a famous Indian sportsman?
A Kapil Dev
B Malai Kofta
C Keema Nan

25. There are loads of free subs to magazines like *PC Plus, 8000 Plus, Amstrad Action, ST Format* and *Amiga Format*. The publisher of these magazines also publishes Britain's biggest selling computer weekly. What is its name?
A *New Computer Express*
B *Pocket Calculator Weekly*
C *Abacus User*

26. You could win one of 20 yearbooks from *Computer Trade Weekly*. Traditionally, how often does a yearbook come out?
A Every 12 months
B Once every 1,000 years
C Weekly

27. Evesham Micros is giving away an Olivetti PC1. What is, or are, 'Olivetti'?
A A computer manufacturer
B Small black salty things you put on pizza
C The Italian version of a smash hit 1968 musical

28. Westoning, the mail order company, is giving away a Batman pack. In the 1960s TV series, Batman was played by?
A Adam West
B Ear
C Arsenal at home

29. Star's LC10 dot matrix printer must be won. Which of the following is NOT a well-known phrase or saying including the word 'dot'?
A My chiropodist's hovercraft is covered in green dots
B Dot the is and cross the ts
C. Be there at six on the dot

30. Which of the following is a computer language?
A BASIC
B TEDIUM
C ACNE

520ST-FM SUPER PACK

The Atari Super Pack is ideal for you if you want to get off to a flying start with the best in entertainment software. The Pack includes a 520ST-FM with ½Mb RAM, a built-in 1Mb disk drive, over £450 of top games and a joystick. If you buy the Super Pack at Silica Shop, we will add our own ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for details.

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Atari CX40 Joystick	Atari Corp	£4.99

FREE ATARI BUNDLE VALUE: £458.97

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NOW WITH TV MODULATOR

For the serious home user and the small business, we are pleased to announce a new package based around the 1040ST-FM. The 1040ST-FM has 1Mbyte RAM and a 1Mbyte built-in disk drive. In addition, the 1040ST-FM now comes with a TV modulator built-in. (The previously available 1040ST-F was designed for use with a monitor only and did not come with a modulator.) This modulator allows the 1040ST-F to be plugged directly into any domestic TV set, and comes complete with a lead to allow you to do so. The new 'Professional Pack' from Silica includes the new 1040ST-FM with modulator plus four high quality software packages including a spreadsheet, database, word processor and programming language. This 'Professional Pack' software will enable you to get straight down to business with your new computer. In addition to this software (worth £384.84), if you buy the Professional Pack from Silica Shop, you will also receive the Silica ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for further information.

£499
INCLUDING VAT

With SM124 mono monitor: £598 INC VAT
With SC1224 colour monitor: £798 INC VAT

ATARI 1040ST-FM	(Computer)	£499.99
VIP PROFESSIONAL	(Spreadsheet)	£149.95
MICROSOFT WRITE	(Word Processor)	£149.95
SUPERBASE PERSONAL	(Database)	£59.95
BASIC DISK & MANUAL	(Language)	£24.98

NORMAL RRP: £884.82
LESS DISCOUNT: -£385.82
PROFESSIONAL PACK PRICE: £499.00

2Mb & 4Mb MEGA ST

The MEGA ST computers are styled as as lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

2Mb MEGA ST
£899 INC VAT
+mono monitor = £998
+colour monitor = £1198

4Mb MEGA ST
£1199 INC VAT
+mono monitor = £1298
+colour monitor = £1498

DTP PageStream £149 +VAT =£171.35

Desktop Publishing (DTP) is one of the fastest growing applications for personal computers. We are pleased to announce a powerful low cost package for the Atari ST called PageStream. PageStream costs only £149 (+VAT=£171.35) and, because it works with an Atari 1040ST and a Seikosha SP-180AI printer, you can be up and running with a complete system for less than £1000. Some of the features of PageStream are listed to the right. If you would like further information on this program, complete and return the coupon below, ticking the 'DTP' box in the corner.

* TEXT-FLOW AROUND GRAPHICS
* ROTATION OF TEXT & GRAPHICS
* SLANT OR TWIST ANY OBJECT
* POSTSCRIPT COMPATIBLE
* TAG FUNCTION
* AUTO/MANUAL KERNING & HYPHENATION
* GROUPING OF OBJECTS

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ATARI ST

ST COMPUTERS

The range of Atari ST computers offers something for everyone. From the games enthusiast who wants the challenge of the very best in arcade action, to the businessman who wants to make financial forecasts or faultless presentations. The ST offers high quality graphics, sound and speed for the gamer, whilst providing a fast, user friendly and affordable solution to business. The ST is now firmly established in the home environment and boasts a wealth of users in education, local government, television, and a variety of different businesses. Software for the range stretches to cover applications as diverse as ENTERTAINMENT, ACCOUNTS, ART, COMMUNICATIONS, COMPUTER AIDED DESIGN, DATABASES, DESKTOP PUBLISHING, EDUCATION, MUSIC, PROGRAMMING, SPREADSHEETS, WORD PROCESSING and more. For a full list of the software available, as well as details of the ST range, complete and return the coupon below.

All prices correct at the time of going to press. E&OE.

520ST-FM EXPLORER PACK
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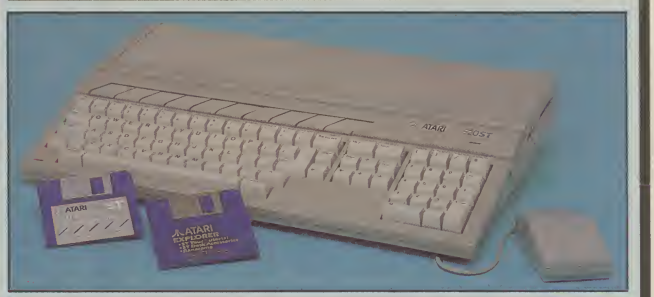

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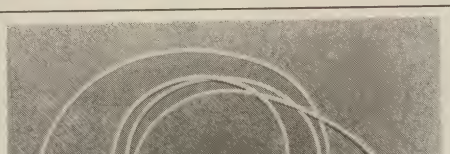

• A prototype of the special lead which will connect your 8-bit computer to a compact disc player. CodeMasters is aiming to develop a 16-bit version soon

• Ted Carron, inventer of the compact disc device, examines the latest in DAT digital tape technology. the next CodeMasters product perhaps?

• CodeMasters founders David and Richard Darling with their PR man Mike Clark show off the advertisement which alerted the 8-bit world to the CD device

COMPACT DISC COMPILATIONS

Now you can use your home CD player instead of a cassette to load games in a fraction of the time – and at a fraction of the price. Jeffrey Davey interviewed the men behind the CD

Imagine being able to hook a CD player up to your computer and getting one of 30 games to load, ready to play, in seconds. From this week you need dream no more because the age of the CD game is here, thanks to CodeMasters. It recently announced a 30-game 'Best of CodeMasters' compilation CD for only £19.95 including the connector lead.

CodeMasters is the brainchild company of David and Richard Darling, two ex-Mastertronic programmers who decided they could make a much better living running their own budget software company than working for someone else's. "Nobody does anything original," complained CodeMasters PR person Mike Clark. So when Ted Carron announced that he could link computers to CD players, the company was very interested

"It arose from the problem of compilation," recalls Ted, "and a general interest in technology". In fact CodeMasters estimates that for a normal 30-game compilation it would take 10 floppy disks for the Commodore 64, between 8 and 10 for the Amstrad CPC, and as far as the Spectrum is concerned the omnipresent problem of loads of games on one tape and no way of knowing where each starts is appalling enough to rule tapes out completely. Apparently cartridges are out of the question too, needing an incredible 12 megabits of cartridge memory.

So why choose CD? Says Ted: "On a CD there's lots of information and you can get at it quickly – it's random access". It's certainly an impressive set-up – it's funny to think that the CD player costs more than the computer – and fast. Demonstrating it on a Commodore 64, Ted was loading games in 10 to 20 seconds.

NICE AND EASY

The beauty of the scheme is its simplicity. All that's needed is a normal-looking lead (that comes with the pack) which at one end plugs into the CD's headphone socket and at the other into the computer's joystick port (Port two for the Commodore 64, although Spectrum owners will need a Kempston interface). All the hard work is done by components in one of the plugs, and by the software.

It's an odd project for a budget software company – how do David and Richard Darling explain it? David Darling believes 30-40 per cent of people who buy CodeMasters games have CDs. And, presumably, there are people who have CDs, don't yet buy the company's games but might look again now.

"We wanted a compilation with style," says David. "We're offering as good value-for-money as we can."

Those who've been around for a while may remember Cascade's '20 games and a watch' offer a few years back – can parallels be drawn? "Generally they were rubbish," says David, "No-one had heard of the games. In our case all the games on the CD are previously released titles."

8-BIT ADVANTAGE

Initially available for the Spectrum, CPC and C64, Richard feels it to be of most advantage to 8-bit users with cassette-based systems. "Without the speed advantage over floppy disk it's not quite such a quantum leap". Confined to tape for so long, Spectrum owners seem to benefit most from this – many tape-based computer owners just dream of a quality game loading in 20 seconds!

Good news for both the company and the whole industry is that the data on the CD is recorded so fast you couldn't copy it onto tape. With the current movement towards a clampdown on pirates this has to be good news. The piracy argument will continue to rage but CodeMasters is safe in the knowledge that, unless there are some very determined crackers out there with literally thousands of pounds worth of equipment (which would only transfer it to tape anyway) its pack is safe

The CD is only out for the three main 8-bit formats at the moment but, according to David, CodeMasters is looking into 16-bit versions. "Our hardware boys are really having a go with this and we're expecting some results pretty soon now."

It has been quietly suggested that they've hit a few snags but also that Atari ST and Amiga owners get reasonably fast loading anyway. To make it worthwhile for 16-bit, there'd have to be something very special on a CD – which is exactly what the company is planning.

Ted has plans for using the 64's speakers to play back the CD as well as loading data. The most interesting development, though, looks to be David and Richard's plans for special CD games.

As David Darling explains: "During the next year we can develop games specifically for the CD with incredible quantities of graphics and sampled sounds." Now there's an appealing prospect.

A compact disc which can hold nearly 80 minutes of music could contain a truly vast game. In the future there is no reason why a micro couldn't be interfaced with the CD's remote control mechanism – such devices are easy to build – and control the random acccess of the CD from within the software itself. That would open up a whole new range of applications for CD in low-cost computing.●

IT'S A BARGAIN

It seems incredible to offer the CD Games Pack for £20. On the basis of the software alone, those games are going for about 66p each! Will CodeMasters make any money? Will it harm sales of the games individually?

David Darling was confident: "We obviously considered that seriously. We also had the choice of selling it at £29.99 or £19.99, but we thought the lower one was the much, much more attractive price, and at that price it could be the Christmas Number One. There are some very, very good games on there. It's exciting because it's on CD, which is new, and on the Amstrad it's the first time it's been done. In fact, the loading times are so fast. It's a way of upgrading your machine without chucking it in the bin and buying an Amiga!

"If we can do it at that price and keep advertising it, it can keep selling it for months because it's such good value. Rather than if it's £29.99, when it's more of just a gift, and it's only going to be successful at Christmas."

If CodeMasters plan to do future releases along the same line, then by doing it at £20 it can give itself a much larger user base right from the start.

"Yes," agrees David, "Because we can get loads and loads of cables out there and then sell the special CD games to those people at a cheaper price because they've already got the cables. Coming back to the games, we thought that if somebody buys the compact disc then they get all of the games so they obviously won't buy those games themselves individually, but they're bound to show it to their friends.

"They'll show people *Treasure Island Dizzy*, *Twin Turbo*, *BMX* and so on – games that they may not have seen before, and if they're really impressed with them then they'll go out and buy them individually, assuming they can't afford to buy the CD. So it could help to promote the games just as much as detract from individual sales."

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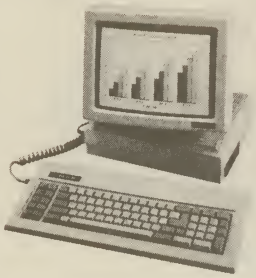

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WHICH COMPUTER?

If you're thinking of spending up to £500 on a computer this Christmas you won't want to be left with a turkey. So how should you go about choosing the right one for you? Express presents the complete low-down on the best machines available...

Take a walk into any High Street store this week and you'll find a bewildering range of bundles and special offers on everything from the latest in pocket-sized gizmos and games-only consoles to top-end IBMs with four-figure prices. You can also find a bewildering range of bull from behind the counter – the assorted ramblings of sales assistants offering 'advice' would be hilarious if they weren't so misleading. It's quite likely you'll be told consoles can run word processors, 16-bit means double the memory and a black and white telly can be used to view accounts on an IBM. Faced with this onslaught, it's best to begin by asking yourself a couple of questions.

HOW MUCH DO YOU WANT TO SPEND?

If it's less than £200 then your choice is limited to older 8-bit machines like the Sinclair Spectrum and the Commodore 64. But watch out! Other 8-bit computers like the Amstrad CPC might cost more but they include a bundled monitor. So unless you want your TV to be torn between the household's telly addicts and its gamesters then you might want to take the cost of a monitor into account. This could be anything between an extra £100 to £300.

WHAT DO YOU WANT TO USE A COMPUTER FOR?

This will probably come down to a choice between serious and leisure usage – though of course there's a large grey area in between. If you're after a machine for business use – some word processing, accounts, filing records and so on – then you're probably going to be looking for an IBM compatible. If games are your forte, and you're not short of a penny or two, then you should look at the Atari ST and Commodore Amiga. But then there's plenty of good serious software for both of the latter machines so other factors will help form your decision. What these are is the subject of our detailed survey overleaf where we've compared the eight main machine ranges – and also taken a look at those designed for more specialised use.

PLAIN SPEAKING

If the world of computing leaves you baffled then here are some brief definitions of the more common jargon.

HARDWARE • The basic components of a system – the main processing unit, keyboard, monitor, disk drive, printer, mouse.

SOFTWARE • The programs which control the computer and make it possible to use. Whether it's *Space Invaders* or integrated accounts, it's all software.

RAM • The memory a computer uses to store programs loaded into it from disk or tape or typed in from the keyboard. Measured in kilobytes (K), the numbers that crop up most are 64, 128, 256 and 512. The greater the RAM the bigger, more complex and more powerful the programs your computer can run.

8-BIT/16-BIT • This describes the particular central processor which drives the machine and refers to how much information it can process in a single step. Thus a 16-bit computer is faster for calculating data and loading programs and is usually capable of displaying more colours.

HARD DISK • A built-in data storage device which can typically hold 400 floppy disks' worth of data and access it several times faster.

IBM PC COMPATIBLE • There are hundreds of different brands of computers which are compatible with IBM's original PC. This means they are capable of running the same software, and therefore a mass of standardized software has been written. Most business computers are PCs, so if you want to run the same programs you use at work, a PC compatible is the one for you.

EXPANSION • The possibility of adding extras to your machine. Here you might be looking at more memory, another disk drive, a hard disk or a more colourful or higher resolution display.

SINCLAIR SPECTRUM

Model: Plus 2 (128K RAM) • £149.99
Bundle: Action Pack – Keyboard, built-in tape deck, TV connector, joystick, light gun, six games
Model: Plus 3 (128K RAM) • £199.99
Bundle: Action Pack – Keyboard, built-in disk-drive, TV connector, joystick, light gun, six games

• For the first time buyer with a limited budget

Who is it it for?
The Spectrum is a still a great little machine for first time buyers with a limited budget – it's one of the cheapest micros around. Not only is the games software inexpensive, there's masses of it and most titles can be bought for between £2 and £12.

Hardware
With 128K RAM, a built-in tape deck or disk drive and a MIDI socket for connecting to musical instruments, the Spectrum is well provided for. However, the TV picture is not of particularly good quality and only eight colours can be displayed at once. The sound capabilities of the machine are also barely adequate. It's best to go for the disk drive model – the Plus 3 – as this drastically reduces the time it takes to load software from cassette. Cassette loading times of five minutes are not unheard of!

Software
The Speccy boasts one of the largest libraries of games software of any machine and comes with a built-in, easy to use BASIC programming language. But compared to other machines, games run relatively slowly, use limited animation and sound pretty appalling!

However, in the serious software department there's everything you'd want – word processors, spreadsheets, databases, graphics packages, even desktop publishing. All at a fraction of the price of those for more expensive machines.

What of its future?
The Spectrum still attracts healthy support from the games software industry as it's sold too many units to disappear without trace. With the advent of the Spectrum-compatible SAM Coupé this situation can only improve.

DECISION TIME
A good first-time buyer's computer ideally suited for the younger games player.

COMMODORE 64

Model: Commodore 64C (64K RAM) • £149.99
Bundle: Light Fantastic – Keyboard, datacorder, art, music and typing software, light gun, TV connector, 3D glasses and four games.

Who is it for?
For most entertainment purposes the C64 surpasses the other 8-bit competition in terms of hardware and software capabilities. But don't expect to put it to much serious use – nearly all the software currently available is leisure-based.

Hardware
With dedicated graphics hardware facilities for screen sprites and scrolling, the C64's moving displays are both fast and smooth. But loading software off the datacorder is very slow and although you can get a disk-drive for the machine it's expensive, slow and noisy. There's also a limited colour range with

• The C64's great for the games enthusiast

only a palette of 16 to choose from. If you want to hook up a printer to the C64, you'll also have to fork out an extra £20 for an interface as the one supplied is non-standard. Fortunately you can buy plug-in an additional 64k of memory if you wish to put the hardware to more serious use.

Software
The C64 has possibly the biggest selection of games software and it also boasts a wide range of programming utilities – which is probably just as well, as the BASIC supplied with the machine is the worst on any micro. With only 64K of memory available, games have to be loaded in stage by stage, which is time-consuming and very annoying, while the few non-leisure titles available appear primitive next to their 16-bit counterparts.

What of the future?
The C64 is the most popular micro in the world, with over three million units sold, so it's likely to be around for a good while yet. This means that although it's beginning to look a bit dated it's bound to stay well-supported. Meanwhile, there's probably a decade's worth of games to get you through the nineties already.

DECISION TIME
A great little performer in the leisure-only market.

AMSTRAD CPC

Model: CPC 464 (64K RAM) • £199
Bundle: Keyboard, mono monitor, TV tuner, built-in tape deck, joystick, 17 games
Model: CPC 464 (64K RAM) • £299
Bundle: Keyboard, colour monitor, TV tuner, built-in tape deck, joystick, 17 games
Model: CPC 6128 (128K RAM) • £399
Bundle: Keyboard, colour monitor, TV tuner, built-in disk drive, joystick, 17 games

Who is it for?
The CPCs offer the best value for money on a hardware basis and both the games player and serious user are well catered for.

Hardware
Since the CPC can display 16 colours on screen from a palette of 27, the colour monitor which is bundled along with it is very useful. The 6128's disk drive is fast and reliable and the keyboard on both is good quality and fine for word processing. A printer and disk drive can also be easily hooked up. On the down side, the 464's tape deck isn't too fast or reliable and the 6128's disk drive uses non-standard and expensive three-inch disks. Using the maximum number of colours on screen produces blocky looking graphics, and scrolling can be slow. As the sound chip is basically the same as the Spectrum's, sound quality is somewhat rudimentary.

Software
Although the CPC doesn't have such an extensive range of games as either the Spectrum or the Commodore 64, it has a wider selection of excellent business titles and the built-in BASIC is first-class. However, major games software companies now declare the CPC sales of their products to be too low, so they only convert the top titles from the C64 and Speccy to the CPC.

What of the future?
Although the CPC has a large and loyal user base, it's the machine most likely to lose out in software support over the next few years because sales figures are lower than its main competitors. But as non-games companies maintain their support the CPC is promised long-term future.

•I A great bundle with a large, loyal user base

DECISION TIME
The best of the bunch in the bundle stakes. A versatile machine with a good selection of both serious and leisure software.

AMSTRAD PCW

Model: 8256 (256K RAM) • £401
Bundle: Keyboard, green mono monitor, dot matrix printer and word processor
Model: 9512 (512K RAM) • £573
Bundle: Keyboard, paper white mono monitor, daisywheel printer and word processor

Who's it for?
Specifically designed for writers, student

• All you need to set up a small business

and small business users, the PCW has a the software and hardware needed to com puterise your serious needs.

Hardware
The PCW is reliable system set up for ser ous work. Both monitors are fine – the pape white model exceptionally so – and the bu in disk-drive is fast and reliable. There ar expansion ports for other printers and a modem and you can even get a MIDI inte face for use with musical instruments. Th only real drawback is the print-quality of th dot-matrix printer – adequate but by n means excellent.

Software
The machine has every conceivable piece o business software you can think of availabl for it. Accounts packages, spreadsheets databases and word processors abound, an there's loads of educational software ava able too. Although the machine is widel thought of as a small business workhorse there are a growing number of programmin languages available too. But strong thoug the PCW may be when it comes to busines software it's hampered by its non-PC stan dard. If you want to typeset from disk fo example most print bureaux don't want t know. As you might expect, on the game side there's not a great deal of software ava able – the PCW was never designed to han dle fast moving graphics. As such, leisur titles tend to concentrate on text adventure and 'brain-games'.

What of the the future?
With 1.5 million units sold, the PCW has a massive user base and is well-supported Although it's fair to say new software onl arrives in trickles these days, this doesn matter much as there's all you could wan already in place.

DECISION TIME
An ideal machine for serious use at cheaper price than a PC.

THE EIGHT MAIN OPTIO

ATARI ST

Model: 520STFM (512K RAM) • £399.99
Bundle: Power Pack – TV modulator, disk drive and mouse, BASIC, *Organiser, Music Maker* and 20 games

Who's it for?
Atari's slogan is 'Power Without the Price' and in the ST you have a robust, versatile machine that opens up a wide world of both leisure and serious software of the highest quality at a reasonable price.

Hardware
With a built-in disk drive, 512K of RAM and a fast 16-bit chip, the ST gives you a choice of three screen resolutions – a high resolution mono display for business software, and two colour displays for business, games and creative packages with a maximum of 512 colours to choose from. A MIDI port is included as are expansion ports for monitors, extra disk drives, hard disks, printers and modems. Despite lacking dedicated graphics

• The most valuable bundle of the lot – which complements a reliable and powerful machine

handling hardware, scrolling is still smooth albeit a little slow. The ST is let down in the sound department, however, as the chip is basically the same Yamaha device used in the 8-bit computers.

Software
The ST's built-in, easy to use front-end requires no typing of commands – everything can be achieved by clicking icons and using a mouse to pull down menus. Most software is also controlled in this way. The range of software is certainly impressive – from games to desktop video – and there's also a huge selection of free public domain software available. The built-in MIDI port has led to an enormous number of music packages for the ST – making it the number one choice for musicians. But software tends to be expensive and the version of BASIC supplied is bug-ridden and, some would say, useless.

What of the the future?
While not exactly white-hot, the future for the ST certainly looks bright. With the recently announced enhanced machine, the STE, set to hit these shores soon the games future is assured, but its future on the business side is less certain. Still, it will undoubtedly be a contender in the home micro stakes for several years to come.

DECISION TIME
A powerful, reliable and well-supported 16-bit computer with all the software you're ever likely to need.

COMMODORE AMIGA

Model: A500 (512K RAM) • £399
Bundle: Batman Pack – Built-in disk drive and mouse, TV modulator, *Deluxe Paint II*, three games

• The ultimate games micro now has a wide range of high-quality serious software to match

Who's it for?
The Amiga was originally designed as, and still is, the ultimate games micro. But there's so much serious software being released for it that it can now claim to be the leader in the art department too.

Hardware
With a built-in disk drive, 512K of RAM and a fast 16-bit chip, the Amiga has a myriad of different screen modes and can handle up to 4,096 colours on screen! It also has dedicated hardware graphics handling for sprites and scrolling and a superb stereo sound chip. Its expansion ports allow it to be connected to monitors, extra disk drives, hard drives, printers, modems and genlock devices which allow you to do titling on videos. On the other hand, the disk drive is noisy, slow and sometimes unreliable and there's no built-in MIDI port. The user interface is also a little tricky to get to grips with and has a reputation, usually among non-aficionados, of being unreliable.

Software
The Amiga has an ever-growing range of games, programming and graphics software, many of which, particularly in the games and graphics areas, are leaders in the field. Software can be very expensive though – with most games costing £20 to £25 – but then you're paying for high quality as much as anything. Serious software – the likes of word processors, spreadsheets, and databases – is now well supported and the machine has an excellent choice of professional-quality desktop publishing packages.

What of the the future?
The Nineties look set to be the decade of the Amiga in terms of software support, with the machine now selling very well and attracting more and more games, programming and graphics utilities.

DECISION TIME
The best of the lot in terms of power and support with a great choice of both serious and leisure software

ACORN ARCHIMEDES

Model: A3000 (1Mb RAM) • £744
Bundle: Keyboard, built-in 3.5-inch disk drive

Who's it for?
Acorn's Archie is a truly powerful micro, and its facilities appeal to anyone who needs a high performance computer.

Hardware
The Archimedes was the first (and as yet only) micro to be built around the principle of RISC technology. This means that its 32-bit processor runs many times faster than any other machine, and you have to pay several thousand pounds to come close to the Archies level of performance.

The Archimedes' display is as good as an Amiga's, in fact better as it offers 256 colours on screen without the limitations of the Amiga's 256 colour mode. Sound is excellent too, with full stereo.

There are several models in the Archimedes range, the more expensive ones include hard disks and vast amounts of RAM. Networking Archies together is much easier than for other machines too.

Software
The Archimedes is now well supported with high quality software. Serious software predominates, with excellent word processors and desktop publishing packages, and amazing art programs. Games lag behind – only the now aging *Zarch* has come close to exploiting the potential of the machine. The Archie will run the majority of BBC micro software, so there is a vast amount of educational software available.

The Archie's RISCOS operating system, like the Amiga's AmigaDOS, allows you to run several programs at once, but is more useful than the Commodore version as the A3000 has twice the memory to hold the programs in.

What of the the future?
As the Archimedes continues to grow in popularity it is held back only by the price of the machine. Expect the Archie to be going strong well into the Nineties, especially as Acorn is promoting a high-end business version, the R140, very heavily as the future of performance computing.

DECISION TIME
If you've got the money, it is the best machine. Most of us, however, haven't.

• Brilliant machine - pity about the price though

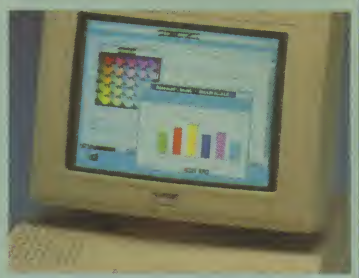
PC COMPATIBLES

Models: Various (512K or 640K RAM) • £299-£4,000
Bundles: Commonly mono/colour monitor, 5.25-inch or 3.5-inch disk drives, built-in hard-disks.

Who are they for?
Robust, reliable IBM PC compatibles are the only micros worth considering for intensive business use since they have more serious software available for them than all the other machines put together.

Hardware
The IBM standard hardware configuration means that most compatibles have built-in expandability – so make sure the one you're thinking of buying will allow you to add an extra disk drive or higher resolution colour graphics adapter if you wish.

Keyboards and disk drives are usually of high quality but the cheaper PCs – capable of displaying only four colours on screen



• Just one of the hundreds of PC compatibles on the market – so it's best to choose carefully

(known as CGA) – are not ideal for word processing. Luckily, hardware and peripheral items are very competitively priced. The main processor comes in three forms, the 8086 (and its twin 8088), 80286 and the more expensive 80386, the latter chips being many times more powerful. PC sound is notoriously awful, but then all it's designed to do is provide warning beeps.

Software
There's a massive library of high-quality business software with specialist applications to suit every need, and since the world-wide PC user base runs into seven figures, you're assured of an everlasting supply. However, software varies in price from cheap sub-£5 public domain to £700 extravaganzas so your wallet size will be the deciding factor especially as many applications require hard disks and expensive high-resolution colour graphics displays.

What of the future?
The PC is the future. The IBM standard, being the industry standard, guarantees indefinite hardware, software and peripheral support. But new applications are more and more geared to top-end machines so owners of cheaper models might find they're unable to run the latest software.

DECISION TIME
Perfect for the serious user – but beware! It's essential to buy a system that you can upgrade as and when you need to.

TIONS: PROS AND CONS

THE OTHER OPTIONS

• Psion's MC400 - the latest lighweight laptop

• Amstrad's PPC640 with built-in modem

• ,Sega's top-selling 8-bit games console

Although most buyers will want to opt for one of the main eight machines featured on the previous pages, there is a range of other types of computers to suit more specific tastes and needs.

HAND-HELDS

In recent months there has been an abundance of compact computers released in response to the increasing demand for miniaturised machines. While earlier incarnations such as Psion's **Organiser (£99)** only offered a somewhat rudimentary notebook and diary facility, the new Atari **Portfolio (£249)** and **Poqet PC (£1,200)** have brought together PC-compatibility and of pocket portability. Running on AA-size batteries, the tiny machines can be used in conjunction with a desktop PC – an ideal combination if your job dictates a lot of note-taking travel. Also just entering the fray is Psion's new A4-sized **MC 400 (£971)** with a full-sized keyboard, a fine display and claimed battery life of 75 hours, which will no doubt begin to make in-roads into the market claimed by Cambridge Computer's **Z88 (£287)** .

PORTABLES

There has never been a better time to buy a portable computer. They can offer all the performance of a desktop computer with clear, albeit normally mono, displays. If portability is an important requirement for you, then the same range of hardware considerations should be taken into account as outlined in the PC-compatibles section on the previous page. The additional things to look out for are screen legibility – the different technologies vary in their clarity and brightness – the quality of the keyboard, the machine's weight and the amount of memory – make sure it's got at least 640K of RAM. *Express* recommends taking a look at the Toshiba **T1600 (£3,195)**, the Amstrad **PPC640 (£799)**, Tandy's **1400LT (£798)**, and for the best on the block, Compaq's **Portable 386 (£4,695)**.

CONSOLES

While we're waiting for the arrival of the hand-held portable Atari **Lynx** and Nintendo **Gameboy**, the games-only console choice comes down to a four-way race between the **Nintendo 8-bit (£99)**, the **Sega 8-bit (£80)** and its 16-bit **Megadrive (£200)**, and NEC's **PC-Engine (£150)**. All are dedicated games machines that run cartridge-based software, but the Sega Megadrive is reportedly soon going to come with separate keyboard, disk drive and monitor – so perhaps there will be some serious or educational software eventually. For those of you looking to buy what might be called a dedicated educational machine, the overpriced **BBC Master (£503)** remains the only serious choice.

•The hand-held Z88 remains a popular choice

• The Rolls Royce of portables -Compaq's 386

• ,The Nintendo 8 - bit - sales are on the up.

THE BEST BUYS

A GUIDE TO BUYING THE BEST

Of course, you can't beat a hands-on test, but the mere fact that you can actually have a go on a machine means you're paying for the privilege. Buying equipment by mail order is often a good deal cheaper, so it's worth studying the adverts. Alternatively you can pick up real bargains second-hand and at auctions. When it comes to purchasing a PC system the choice is literally mind-boggling, but because PC suppliers compete heavily for sales it might be worth building yourself a bargain by separately purchasing the various components you require. This isn't as daunting as it sounds and will be the subject of a major *Express* feature in January.

BEST ALL-ROUNDER

For the buyer who's interested in a wide range of uses for a machine – word processing, graphics, music, games and programming – the best value computer to go for this Christmas is the Commodore Amiga. So there you have it, we've come clean at last. Actually, there is not a lot in it – the Atari ST comes in a very close second, but with equal software support at last and a better tech-spec, the Amiga just has the edge.

BEST FOR BEGINNERS

The Amstrad CPC has to be the best bet here because it's bundled with a colour monitor, has a good range of games software, and can boast some pretty useful programming utilities and great 8-bit business software.

BEST FOR BUSINESS

Depending on the size of your enterprise, it's a toss-up between the plug-in-and-go

Amstrad PCW system and the minefield of PC compatibles. But with PC prices ever decreasing – only last month we featured a 512K twin drive Olivetti with mono monitor for £299 – the choice is more difficult. In the end, the PC compatibles take the award as they will be the business machines of the Nineties.

BEST FOR PORTABILITY

Atari's Portfolio is the cheapest, smallest, lightest and most useful portable around at the moment. Useful because you

can hook it up to a desktop machine and do two-way transfer of datafiles. At £250 it represents excellent value. However it might be worth waiting for the new Psion MC 200. At £626, it features a unique 'voice-note' feature allowing you to dictate reminders and notes verbally – a pointer to things to come.

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C-Lab Notator	£399.99	Amas	£79.99
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Edit Track	£199.99	Pro Sound Designer Gold	£74.99
Super Conductor	£39.99	Eidersoft Midi Interface	£24.95
Pro Sound Designer	£49.99	Datel Midi Interface	£34.95
ST Replay 4	£64.99	Music X **Out Now!**	£189.99
		Dr T's KCS	£159.99
		Dr T's Midi Recording Studio	£52.95
		Deluxe Music	£59.95

ART & ANIMATION

ST		AMIGA	
Degas Elite	£19.95	Lights, Camera, Action	£47.95
Cyber Paint 2	£54.95	Zoetrope	£79.95
Cyber Studio CAD 3D	£69.95	Aegis Videoscape 3D	£109.99
Spectrum 512	£44.95	Comic Setter	£44.99
Quantum Paint Pro	£32.95	Mini-Gen (Genlock)	£99.99
		Moviesetter	£56.99
		Deluxe Paint III	£59.95
		Photon Paint II	£69.99

GAMES SOFTWARE

ST SOFTWARE		AMIGA SOFTWARE	
APB	£13.99	Batman the Movie	£17.99
Batman the Movie	£13.99	Battle Squadron	£17.99
Battlechess	£17.99	Beach Volley Ball	£17.99
Continental Circus	£17.99	Continental Circus	£17.99
Dogs of War	£13.99	Dogs of War	£13.99
Falcon	£17.99	Falcon Mission Disk	£13.99
Falcon Mission Disk	£13.99	Grand Prix Master	£13.99
Ferrari Formula One	£17.99	Keef the Thief	£17.99
Fiendish Freddie	£17.99	Kenny Dalglish Soccer Match	£13.99
Grand Prix Master	£13.99	Kick Off	£13.99
Hard Driving	£13.99	Kick Off Extra Time	£9.99
Indiana Jones the Adventure	£17.99	Never Mind	£13.99
Kenny Dalglish Soccer Match	£13.99	North and South	£17.99
Kick Off	£13.99	Passing Shot	£13.99
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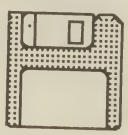
DISKS



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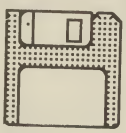

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This week Rob Ainsley answers your letters

Going a bomb

In *Express* 46 there was featured a Game of the Week, called *Lancaster*. As an old Lancaster pilot, I would love to have one for my Amstrad PCW 9512.
Alex McClure, Hemingbrough, North Yorkshire

I'm afraid we've been unable to find any PCW versions of *Lancaster*. The only flight sims for the PCW, as far as we know, are *Tomahawk* (a helicopter sim, £19.95 from Digital Integration on 0276 68459) and *Strike Force Harrier* (Harrier Jump Jet sim, £19.95 from Mirrorsoft on 01-377 4645). A shame, because most of us who play flight sims will never get anywhere near a real cockpit. It would be interesting to have the opinion of an ex-pro on the game!

Studious words

I think your recent arguments over hacking have been really good and informative. I know someone in the computer security trade. He tells me that out of the five major banks, only one has adequate security on the system. (He wouldn't tell me which one it is.)

My friend assures me that one of the banks actually stuck a bit of standard sticky tape over the keyboard, which, if broken, indicated that someone had 'accessed' the system!

I was hoping that some space freak would point out your space shuttle mistake: that it isn't nuclear powered. Unfortunately Iolo Davidson isn't very good when it comes to chemistry. The booster rockets actually destroy 15 million tons of the ozone layer each time they are used – not exactly harmless.

As I'm studying Astrophysics I am looking for a word processor that can deal with some weird and wonderful scientific notation. In this week's article on word processors you mentioned *Chiwriter*; is that the only good one? I have a Amstrad PPC640 with a DMP3250 printer to use it on. I'd like one at a cheap price.

PS. Students living in London now have their own computer shop that is unbiased and gives discounts. It's at the ULU Building, Mallet Street, London WC1E 7HY.
Paul Guinnessy, London

Chiwriter is probably the best bet around at the moment but if you can hang on till February, have a look at *LocoScript* (£125 from Locomotive on 0306 740606) which comes out then. It can cope with all the Greek letters and maths symbols.

Chiwriter is better for the pure notation (i.e. does it bigger and more flexibly) while *LocoScript* gives you the word processing features like spell checker, mail merger, database etc. that will be useful for your other coursework.

But what about Prince in public domain?

With regard to Uncle Techtip's comments about not messing about with public domain music samples etc, what's the position on the use of copyright music on PD disks in the first place? The public domain libraries are full of samples taken from films, television and records. Surely it's an infringement of copyright in the first place (how many hackers pay royalties to Prince, for instance?).

A PD column is a good idea, though many magazines are now doing the same. The virtue of cautious praise is one thing to bear in mind, I think, when reviewing and recommending 'demo' or 'intro' disks, produced by groups of hackers/programmers (largely from the continent) with wacky names such as 'the Purple Blitter-Eaters'. While some of the demos are undoubtedly brilliant (I'm an avid collector of them myself) many of the groups producing them are also into breaking copy protection and passing around copies of illegal games.

Why, I myself was recently shown some 'hacked' copies, and the same names that appear in the PD libraries appeared on the disk, often boasting (in sometimes indecently crude terms) about how easy the protection was to break. Of course, these hackers don't object to copies of their work being passed around, but should their 'legitimate' disks be reviewed by a responsible magazine (as they are in some Amiga magazines)?
Honest Boris Parsnip, Northampton

I guess that the sampled sounds are indeed an infringement of copyright, but are just too much trouble to chase up for damages.

Maybe a lot of hacked demos do come from the continent, but I bet a lot come from the incontinent as well – I wouldn't be surprised if hackers' lack of self-restraint extends to their bladders.

It would be a dodgy business, reviewing admittedly brilliant and legitimate etc. demos produced by crackers, and therefore giving the illiterate knobwits the sort of credibility and recognition they crave. It would be like having a TV travelogue on 'Great Train Journeys' hosted by Ronnie Biggs.

Pedants' points

(strictly, only a single pedant)
One of your correspondents has recently made the boringly pedantic point that the plural of *virus* should be in the Latin form (*viri*) rather than the English form (*viruses*). Why he should suppose that it is desirable for users of English as their medium of communication to conform to Latin grammar regulations I really cannot imagine.

Even if we are foolish enough to wish to use the Latin plural of *virus*, can we be certain that it is, in fact, *viri*? As you correctly point out in last week's *Express Mail*, *virus* is of great interest in that it is a neuter noun of the second declension!

I should like to refer you to *Kennedy's Revised Latin Primer* (1962 Edition) which notes, in the section on the second declension, three neuter nouns (*pelagus*, *virus*, *vulgus*) and remarks that these are "...used in the singular only".

If the Romans didn't use a plural form for *virus*, what sense is there in our inventing one on their behalf 2,000 years later?
Neil Harvey, Soberton Heath, Hampshire

None at all, and you're absolutely right, Neil. (*Virus* wasn't quite as unique as I thought, but still, er, relatively unique).

I only wish that we had no need to use the plural of the word in its computer sense – or for that matter that we had no need to use the singular.

Exam failure

Just a quick note to congratulate you on the new design layout, it's great – three extra pages, more news, competitions, and still for 58p (where else can you get such good value for money?)

I had a great laugh reading the *Express* Listings in your last issue, although there's one slight criticism – you said that getting 14 per cent in a English Mock GCSE exam makes your chances of being a reviewer extremely unlikely.

Any good school boy (or girl) knows that the GCSE English is in fact assessed 100 per cent on coursework – no exam!
P Ware, Cheshire

Thanks for the compliments – we hope other readers like the new format too. Take a bow Ange, she designs (and redesigns) *Express*.

Our School Affairs Correspondent, Adrian Price, confirms that the English GCSE is not examined, whoops!

You see, I was brought up in the olden, golden days of O- and A-levels, when one could muck about at the back of the class for four years doing impressions of the teacher, then work like heck for the last term and scrape through the final exam.

It's a crying shame that I didn't get continuously assessed for doing impressions.

ROM lad

Please could you tell me where I can buy the top 10 US CD ROMs.
DPG Robinson, Brighton, East Sussex

Try KimTec on 0202 888873 that distribute all sorts of CD ROMs. One of the US CD ROMs is called *Culture* and claims to be 'a hypermedia guide to Western Civilisation'. Only in America would somebody try to sell you *Culture* with a straight face.

The problem's roots

When, if ever, are we going to see an RPG shoot/beat-'em-up? With present games in this genre, you play through identical routines each time you load, and once you've reached the absolute end of the game, the game loses its appeal.

With an RPG style game, however, you could take your player through training working on different

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attributes such as agility or strength. For example, one character may be able to do a triple somersault while shooting at his opponent underneath but not be able to use the 'mega death rapid-fire machine gun'.

This would take away some of the tedium that these games tend to bring about at present, forcing a player to find different routes according to his players' abilities.
Matthew Millar, York, N Yorkshire

Anyone know of any shoot-'em-ups that have some sort of role playing aspect?

A little dinosaur

Why do people insist on comparing the Amiga with the ST? Different things. Valid comparisons would be an Amiga with a Sega console (games machines), an ST with an Apple Mac (versatile machines) and a PC with a Brontosaurus (dinosaurs).
P Bates, Derby

On the other hand, the dinosaur standard survived for about 120 million years. Theories that they were killed off by meteorites, global catastrophe, freak climatic change etc. are all wrong. In fact they were taken over by Amstrad.

Battle fatigue

When the single-sided disk drive on my Atari ST succumbed to battle fatigue two hours into the Operation Conquest scenario of *Combat Pilot*, I lost no time in returning the computer to the shop.

After five endless weeks of being grounded, I received a replacement machine with double-sided disk drive, and I returned to the fray. At the end of 17 heroic missions, over four weeks, totalling another 5 hours 49 minutes in the air, I achieved a decisive victory, and was there-and-then, on the battlefield, promoted to the Dawn Raiders Squadron.

I spent the rest of the night celebrating, and came the dawn, I immediately started another punch-up with the enemy. I was an hour and a half into hostilities when the disk drive died again.

Is there a special routine written into *Combat Pilot*, where if you're giving the suckers a real hard time, they maverick your disk drive ?
Major Mike, Leeds

I suppose it's similar to the routine written into PCW *LocoScript* which introduces random errors between saving the perfectly correct text file and printing it.

Me, argumentative?

As a PCW owner I always enjoy reading Basil Pigg's column but am sorry to see you waste your limited space on utterly ridiculous comments about astrology, instead of letting your readers decide for themselves whether it is valid or not. (He also recently attacked biorhythms.)

Perhaps he has forgotten that up to the 17th century both astronomy and astrology were one and the same: the foundation date of Greenwich Observatory was chosen for being astrologically propitious.

I will not bore you for agrument's sake, but will just point out that unless you can prove that you have tested the claims of astrology yourself then your attack on is itself unscientific and superstitious !

It wouldn't surprise me if he has either Taurus or Scorpio strong in his horoscope – both tend to be pig-headed or arrogant know-alls!
Neil Foster, Prescot

Mr Pigg only utilised five words in dismissing astrology as 'a load of old tosh', which seems a remarkably efficient space-wise. He says it is an astonishing coincidence that you guess he has either Taurus or Scorpio in his horoscope, because many astrologers, like you, have guessed his sun and moon signs with amazing and uncanny inaccuracy.

I think astrology is generally a harmless and jolly pursuit – even I like to read things in magazines which suggest that I may now be thinking of Christmas shopping – and may even do some good by making people feel reassured, but that's as far as it goes. It is not a science. Sciences have names like 'chemistry' and 'physics' and 'biology' and deal in fact and observations, not groundless, airy-fairy nonsense.

Viruses are great

I am writing in defence of responsible virus writers. Yes, there are such people in the world, just as there are responsible hackers and crackers.

In my opinion, viruses are just another part of computing; I think they will always be there, and to me they are the most interesting aspect of the computing hobby. Okay, I'm not saying I agree with destruction of people's data, infecting their systems, or any other form of aggression, though there are exceptions. (eg, the virus launched against NASA, *Express* 52)

What aggravates me is that journalists class all virus writers as being sick and childish. If you have ever examined the code of a virus you will see that a lot of work goes into writing one – the Lamer exterminator happens to be my favourite.

As I have said, virus writers are not all destructive, sick and childish. Viruses do have a good side. At the moment, I am working on a program that incorporates a virus into a games copy protection, as I feel there would be a large market for a successful program of this nature. I think it is ironic that viruses written to infect and destroy data can also be turned around and be used to protect data and systems.
Wayne, Humberside

Sure, we should look generously on virus writers. And burglars – I mean, it's a skilful job actually, isn't it, stealing videos and jewellery from houses without getting caught? Mass murderers, too. And how come we never hear about the good side of Adolf Hitler and the SS?

In case you haven't quite twigged on to the very subtle sarcasm in the previous paragraph, you're talking absolute crap, mate.

Chaotic idea

Is there a book of Mel Croucher's Computer Chaos series of articles, and if not, why not?

Do you know of a five key add-on that replaces a standard keyboard? I saw such a device originally on *Tomorrow's World* and since on a small electronic organizer; can it be used on the Amiga, and who can I contact about it?
Steve Jones, Shrewsbury

No collection of Computer Chaos as far as we know, but there could well be something to interest you coming from Future Publications, publishers of *New Computer Express*, *PC Plus*, *8000 Plus*, *Mac Publishing*, *Amstrad Action*, *ST Format*, *Amiga Format* and *S* some time next year...

The five-keyed organiser is probably the AgendA (yes, it really is spelled in that ridiculous fashion). We're hoping to do a review in a week or two, so look out on the newsstands....

The Archimedes – specwise it leaves the rest behind

"The quality of the Amiga software is light years ahead of the Archie,' it was claimed in *Express* 54). Well that last statement is absolute crap. The Amiga has more software, but there are packages for the Arc that leave the Amiga standing. One such software package is *Impression* from Computer Concepts.

In fact, *Impression* must be one of the best DTP/word processor packages around (the term is actually document processor), because it uses Acorn's outline fonts (not even the Mac uses outline fonts) and is blindingly fast. On top of all of that it multitasks as well.

If I had to recommend a computer to a graphic artist I would tell him to get an Archimedes with *Pro-Artisan* (faster and easier to use than anything on the Amiga, it is coded in 90 per cent basic) *Atelier*, *QRT*, *RT* and the forthcoming *HAM Paint* from Cambridge international software.

So what's all the fuss about Atari's TT? The Archimedes is faster, has better sound and graphics and now even native software. And when Acorn starts to mass produce the Arm 3 the Archimedes will run faster than any 486 PC (only top of the range 33MHz 64K cache 386PCs can currently go faster) with graphic resolutions higher than that of super VGA and a complete multitasking operation system for about a tenth of the cost.
Dennis Murphy, Wembley, Middlesex

I feel a few points have to be raised in response to Fergal Moanes' letter (Archie vs Amiga, *Express* 54).

Firstly regarding the million pixels per second co-processor blitter speed of the Amiga. In the same way that you cannot use benchmarks as definitive speed tests of the Amiga, you can't use a one-off figure of pixels per second to justify fast graphics. No program consists of purely pixel manipulation, the majority is background code. If you can produce a computer with a very fast CPU which can match the graphic speed of a blitter-based computer, then you are going to get a far faster final result. This is because the whole code is speeded up, not just the pixel plotting.

Because of inefficient design a RISC (68000) CPU takes typically 4-6 ticks to carry out an instruction – this leaves a lot of slack processing time. It is this the blitter utilises. In Acorn's ARM, equivalent instructions are mostly accessed on one tick thereby reducing greatly the time or need for the co-processor. The one real advantage of the CPU design is that the speed increase is accessible from the two-line program to a number-crunching spreadsheet.

I feel that one of the reasons why manufacturers use hardware 'tweaks' has been missed. It is not because it is the only way of achieving high speeds but simply the cheapest. The majority of fast processors (386, 68040) cost hundreds of pounds each, and therefore it would be prohibitively expensive to build a home computer around them.

Secondly, monitors. To get beyond the 256-line limit of normal monitors interlace has to be used, and this causes picture shake. The multi-sync allows a rock steady picture. The Archie can be used, however, with a 512-line display and normal monitor by simply defining a new mode, which in turn can be used by any RISCOS compatible software. It was Acorn that set the limit of 256, presumably to ensure that the best picture quality was obtained in the highest modes.

Thirdly, the Archie is approximately two years behind in software development, but with 1Mb, better quality software will come faster. Amiga software development will be hampered by the 512K base machine.

Finally the reason the BBC lost out to the C64 was not lack of custom chip but simply that Acorn never sold it at a competitive price. If it had been reduced to £200 over the years it would still be selling now in large numbers.
S Ware, Macclesfield

Whatever you think of the Archie, I don't think the old 'nice machine, shame about the software' jibe really holds any more. If you want to have a go at the Arc, criticise the price: as S Ware points out, like the BBC before it, that's the biggest problem with the Arc now.

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COMPUTER CHAOS

Another dose of microcomputer mayhem from computing chaos expert Mel Croucher

PASADENA, CALIFORNIA

Dan Kegal and Ted Williams are a couple of students of Experimental Projects in Electrical Circuits. They hack into the electronic scoreboard of the Rose Bowl football stadium. Using a radio link operated at a distance of two miles, during a televised match they transmit unauthorised text and graphics featuring a euphemistic 'beaver'. The TV company doesn't notice anything amiss until the last quarter, when it hastily pulls the plug. A figure of $4,200 damages is ordered by the city Prosecutor, after the scoreboard is repaired. This is a pity, because repairs aren't necessary. Any electronics student can spot the fact that a two dollar connector has to be removed to regain control of the system. The good news is that Kegel and Williams get the hijack as part of their university course.
(Associated Press)

DHSS, EALING

Social Security payments are converted from the London Borough of Ealing's paper files to a new computerised system. This is meant to ease staffing problems. When the Glasgow DHSS Mission Control computer examines the records, an error rate of 80 per cent is reported. This is hotly denied by Junior Social Security Minister Mrs Gillian Shephard as being "vastly overstated". The true figure is no more than 34 per cent! At time of writing, 200,000 of the poorest citizens of London are being cheated of their benefits, especially young people living away from home. In fact the computerisation has been totally cocked up by errors in postal codes, National Insurance numbers and file transfers, and the Association of London Authorities is calling for the scheme to be scrapped as "unworkable".
(Diane Abbott MP)

NETHER REGIONS, UK

The Health and Safety Executive commissions another study into safety hazards suffered by VDU operators, and once again the highest number of hospitalisations is found to be lurking beneath the backside. There are two million typists chairs featuring pneumatic springing, which use a nitrogen gas cylinder to cushion the jiggery-pokery of operators, and these cylinders are prone to metal fatigue. Three more serious cases are reported, whereby VDU operators experience anti-personnel bombs exploding under the kilt, requiring emergency hospital treatment after the world drops out of their bottom.
(*Computer Law and Security Report*)

LOS ANGELES, USA

Ferranti is not alone in demanding megabucks for naff missiles. The General Dynamics Corporation is shopped to the Federal Court by four of its own employees. Evidence is produced in the form of a 'Cheater' software package, which they have been encouraged to use for falsifying tests on the US Navy's Phalanx anti-missile gun. The program says that the Phalanx works like a dream. In actual fact it works like a nightmare at a cost of several million dollars to the US tax payer. The software is retired. The employees are black listed.
(*Los Angeles Times*)

SAN FRANCISCO, USA

A new communications software system is installed at the Federal Reserve Bank computer centre. Its first action is to give away two billion dollars at random. Merry Christmas!!
(*Financial Times*)

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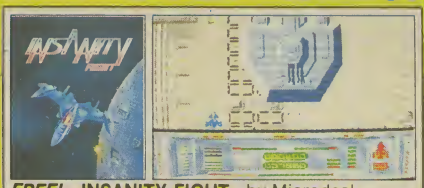

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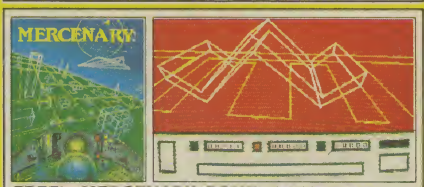

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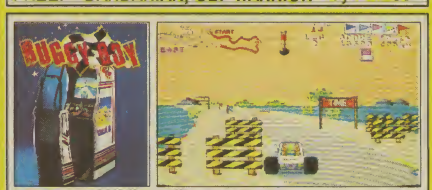

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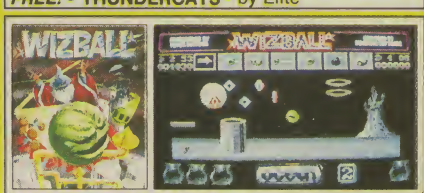

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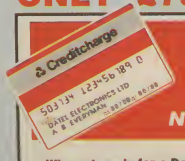

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